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Physical Survey of Virginia.

PRELIMINARY REPORT

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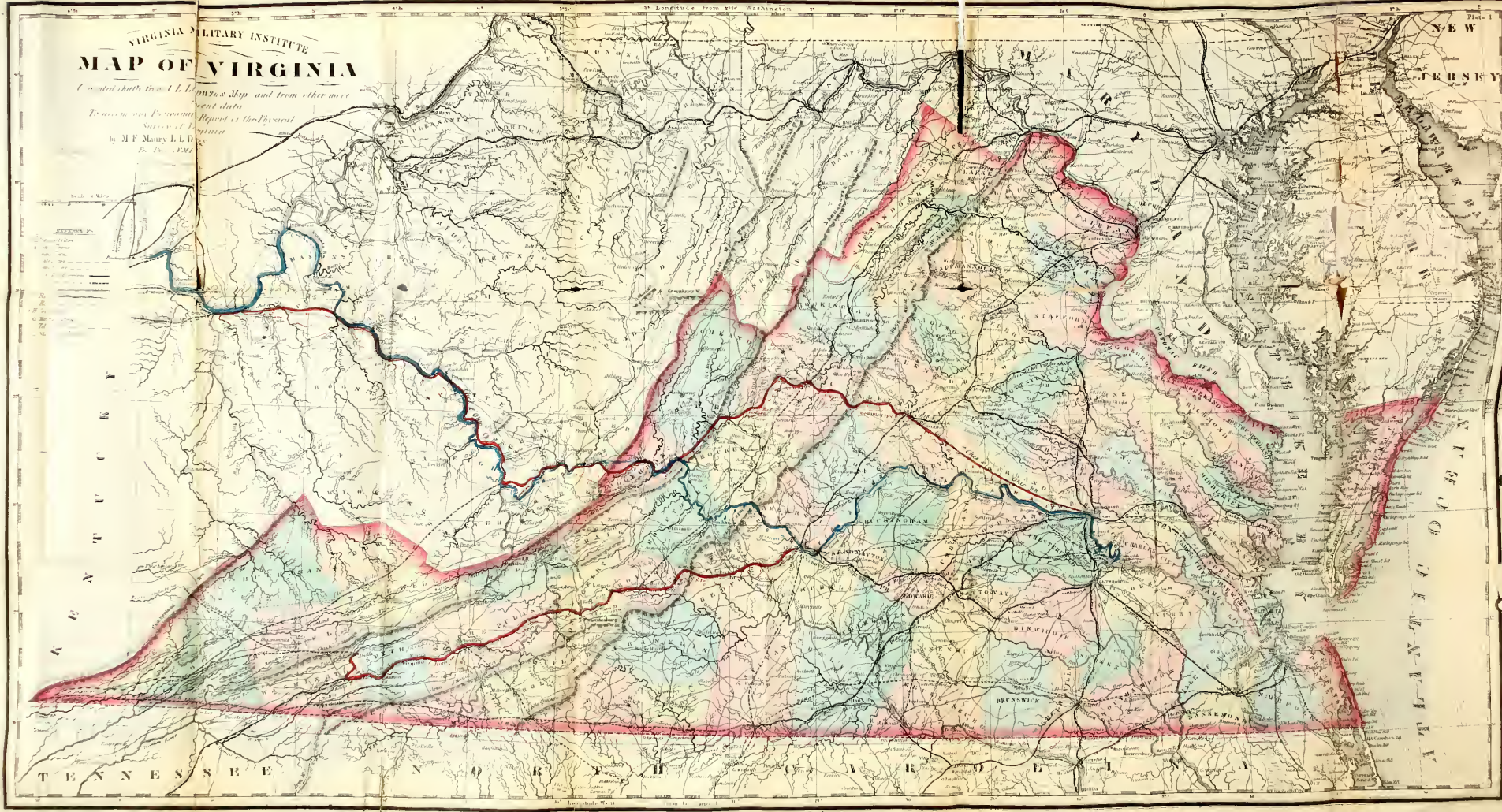


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Survival of the Fittest

by M. F. Maury, U. S. D. C.



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PHYSICAL SURVEY OF VIRGINIA.

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GEOGRAPHICAL POSITION OF

ITS

Commercial Advantages,

AND

National Importance.

(PRELIMINARY REPORT)

BY

atthew Montaine 1806-1873
M. F. MAURY, LL. D., &C., &C.,

PROFESSOR OF PHYSICS

Virginia Military Institute,

LEXINGTON, VA.

GEN. FRANCIS H. SMITH, A. M.

SUPERINTENDENT.

DECEMBER, 1868.

RICHMOND:

W. A. E. NYE, BOOK AND JOB PRINTER,
Whig Building
1868.

PRELIMINARY REPORT.

NO. 1.

OFFICE OF PHYSICAL SURVEY, November, 1868.

GEN. F. H. SMITH,

Superintendent Virginia Military Institute, Lexington.

GENERAL:

In entering upon the duties of the office which has been assigned me in connection with the noble State Institution over which you preside, it has appeared most advisable, first to collect and embody in a series of Preliminary Reports, all existing information bearing upon the objects of the survey.

These objects briefly stated are to develop the physical resources of the State, to make known its geography, and to point out the great commercial advantages which naturally arise from its situation with regard to the sea and the interior; to show the national importance of that situation and the benefits to arise from turning it to account; also, to collect from the people and embody in like manner all the information already possessed by them, as to the climate, soil, and productions of the State, its mineral resources, water power and manufacturing facilities, to the end that industry may be stimulated, enterprise encouraged, the material prosperity of the people advanced, and the general welfare of the country promoted.

Considering the circumstances under which recent events have placed the people of Virginia, the exhausted and impoverished condition in which four years of fierce and bloody war have left them, together with the disorganised and unsettled state as to both labor and capital with which the three years of subsequent misrule have afflicted them, I have thought it best to address myself in this

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preliminary work, first to an economic study of the geographical position of the State, with the especial view of pointing out its commercial advantages, its bearing upon the common defence and the national importance which it gives to its two grand lines of internal improvement which are designed to connect the Western States with its seaport towns.

These advantages are so pervading, that other States with the nation at large are as much interested in turning them to account as is Virginia herself.

Naturally and both in a geographical and military point of view, Norfolk with Hampton Roads at the mouth of the Chesapeake Bay as its lower harbor, and San Francisco inside of the Golden Gate in California, occupy—one on the Pacific, the other on the Atlantic—the most important maritime position that lie within the domains of the United States.

Each holds the commanding point on its sea-front; each has the finest harbor on its coast; and each with the most convenient ingress and egress for ships—is as safe from wind and wave as shelter can make them. Nor is access to either ever interrupted by the frosts of winter.

In the harbors of each there is water and room to berth not only all the ships of commerce but the navies of the world also.

Government, appreciating the importance of these two havens of the sea in their military aspects, has established upon them its principal naval station on each coast, and has encouraged with marked liberality the construction of a system of internal improvements designed to connect the port of California with the interior for the distance of more than a thousand miles by rail.

But so far nothing for bringing that interior into connection with the ports of Virginia, notwithstanding the bearings of such controlling geographical and commercial facts as these, viz:

1st. The great commercial marts of the world lie on the shores, not of the Pacific but of the Atlantic Ocean.

2d. The commercial tendency of the agricultural produce of the Mississippi Valley is to seek outlets not to the West, but to the East.

The last named fact has impressed itself upon the internal improvements of the country, and so influenced them in their line of direction that now not one tithe of the produce of that Valley seeks an outlet by river to the South into the Atlantic, but by rail and water to the East.

For the year ending 30th June, 1867, the total specie value of the domestic exports of the country amounted (in round numbers) to * \$334,400,000 of this sum, \$317,000,000 went to countries bordering on the Atlantic. The countries which took the remaining \$17,000,000, or 5 per cent., are, it is true, washed by the waters of the Pacific, yet the voyage outward and homeward to the best customers among them is on account of the winds and current nearer, from the Capes of Virginia than from the Golden Gate of California.

THE ATLANTIC AND PACIFIC OCEANS IN THEIR COMMERCIAL ASPECTS.

These two Oceans present in their physical features contrasts as marked as is the difference in their commercial importance to us. The Atlantic is a long and narrow ocean—it is easily traversed. Modern improvements and discoveries in navigation have brought its most distant ports within two or three weeks of the harbors of the Chesapeake.

The Pacific is as wide as the Atlantic is long. The round voyage under canvass to India or Australia requires more time from the ports of California than it does from the shores of Virginia.

Therefore, to connect the port of California by a great national work with the Mississippi Valley and then to leave the harbors of Virginia out, would be like forging the two ends of a chain and leaving out the connecting link in the middle.

Thus unconnected, no cable can subserve half its purpose, nor can it, for want of scope, hold the ship to her moorings in times of storm and tempest.

That the Atlantic is the most commercial of the four great oceans, is owing to the same cause which makes the harbors of Virginia, so important by reason of their physical aspects, viz: GEOGRAPHICAL POSITION. The greatest and the longest rivers of

* Annual Report of Bureau of Statistics, 1867.

the earth empty into the Atlantic ocean. All Europe is commercially tributary to it; so also is the greater part of Africa, and through the Mediterranean, all of Algeria, Egypt and Asia Minor. On its western shores, the whole of South America, except the inhabitants of a narrow strip, about 120 miles in breadth, between the Andes and the Pacific Ocean, must look to the Atlantic for an outlet to the markets of the world; so must the whole of North America that lies on this side of the Rocky Mountains.

These are the regions over which the Christian nations of the world hold chief sway. They have the most wants for they are most enlightened; they are therefore, the most commercial and mighty.

With them "COMMERCE is king;" and nothing that man can remove, is permitted to stand in its way. In obedience to its dictates, the government of the United States is with a munificent hand encouraging the construction of a great railway from the Pacific to the navigable waters of the Mississippi. The people have in contemplation others. By an air line, the terminus to these roads is nearer to Norfolk than to New York; that of the northern by 100, and that of the southern by more than 200 miles.

WATER AFFORDS THE CHEAPEST TRANSPORTATION.

Of all modes of transportation, that by water is the cheapest, and were the two main lines which the natural features and position of Virginia so highly favor, completed, viz: one from the Ohio River the other from the Tennessee to the waters of the Chesapeake, then the distance from the heart of the Mississippi Valley taken as at the mouth of the Ohio to the sea, will be, by the James River and Kanawha Canal, 760 miles less than it now is by the northern lakes; and by the Tennessee River and the south-west route, 1,450 miles less than it is by the Gulf and Sea to New York.

So circuitous, inconvenient and expensive are existing routes by Lake and Gulf that Western farmers are now compelled to pay 68* cents on every bushel of wheat that is sent as far as from Dubuque, Iowa, to New York.

Mr. Abert, in his official report on the navigation of the Illinois

* Official Reports, U. S. Army.

River and a ship canal thence to Lake Michigan, says that statistical reports of Lake Boards of Trade and the report of the Chicago Convention "show that present rates of freight through the Illinois and Michigan Canal, the Great Lakes and the New York Canals, *amount to a prohibition on corn grown one hundred miles west of Chicago!*"* The natural facilities afforded by Virginia for a new way to the sea will, when they are properly taken advantage of, unlock all the country that is thus shut up.

With the Virginia water line completed, Western corn would be put on board ship in Hampton Roads at less than half the cost that now attends its shipment at New York.

The people of the great West are entitled to the cheapest highway to the sea that nature allows and that art can construct. For the want of such a way many of them have been, and are now paying more than one-half, and some of them as much as six-sevenths the value of their produce to get it to the seaboard. Are they not entitled to a free right of way to its nearest and best havens? The sea is the common highway of nations and all people are entitled to claim free access to it.

For want of such a way through the Mississippi River the tranquility of the country was once endangered, and to secure it the purchase of Louisiana was effected.

Subsequent inventions and improvements have so changed the routes and increased the business of commerce that the Mississippi River no longer suffices for the West and its trade. The same necessity which dictated the purchase of Louisiana now demands the construction of these two great lines of improvement through Virginia. The purchase of Louisiana cost \$15,000,000, and the population of the whole country was then only six millions.

Virginia with her unequalled geographical position freely offers the right of way for these routes. For the lack of them the United States has already fallen behind France and England, her chief competitors in the commercial race.

It appears from the statement of Mr. Delmar, the Statician of the Government, that while from 1860 to 1867 Great Britain has

* Gen. Willson's Survey Illinois River, 1867.

increased the value of her domestic exports \$237,000,000—or 30 per cent.—and France hers \$226,000,000—or 43 per cent—this country has fallen off in hers \$39,000,000—or “over 10 per cent.”*

To what is this falling off to be attributed? not to the crippled condition of the South, for it appears, according to the same statistician and the same report, that during the last named year, the exports of the Southern States alone amounted to 69 per cent. of the total exports for the whole country; and this notwithstanding a new article (petroleum) had entered into the list of Northern exports since 1860, and amounted in 1867 to \$17,200,000. Notwithstanding this valuable addition and the increased breadth of land that has been brought under cultivation in the Northwest since 1860, there was still a falling off of \$39,000,000 in the grand total of domestic exports. So much of such increased breadth of land as is over 100 miles west of Chicago† is therefore now shut out from the Atlantic seaboard and until new and cheaper routes be opened, can contribute nothing to the exports of the country.

Whatever be the legislative steps required to regain for the country her former position in the commercial race, surely the one for opening these short cuts and this cheap water line to the sea, by which the Western farmers are to save from \$4 to \$8 a ton on all the produce they raise for sale, and as much on all the foreign merchandise they buy for their own use cannot be regarded by any means as the least among them.

GEOGRAPHICAL POSITION AND INTERNAL IMPROVEMENTS OF THE STATE.

Virginia lies between the parallels of $36^{\circ} 30'$ and $39^{\circ} 40'$ of north latitude, and California is crossed by the same parallels.

The internal improvements of Virginia consist in railways and canals of $1,371\frac{1}{4}$ miles of the former and 276 miles of the latter.

About sixty million dollars—estimated—have been expended in the construction of these works, all of which with the other lines that are in contemplation at present, are projected on the accompanying map of the State.

* Alex. Delmar, p. 35 Commerce and Navigation U. S., 1867.

† General Wilson's Report.

STATEMENT*

Showing the Railroads of Virginia completed and in operation, with the Length of the Main Line between the termini, the Cost of Construction and Equipment, the Date of Charter, and the Counties through which they pass.

No.	Name of Road and Counties, and Date of Charter.	Length.	Cost.
		<i>Miles.</i>	<i>Dollars.</i>
1.	Alexandria, Loudoun and Hampshire, March 15, 1853, completed to Leesburg; passes through the counties of Alexandria, Fairfax and Loudoun.....	37.5	1,538,744
2.	Chesapeake and Ohio, (Louisa road,) February 18, 1836; Virginia Central, March 5, 1849; Chesapeake and Ohio, March 1, 1867, completed to Covington; passing through Henrico, Hanover, Louisa, Orange, Albemarle, Augusta, Rockbridge, Bath and Alleghany	204.9	6,090,140
3.	Clover Hill, February 5, 1841; from the Clover Hill coal pits to Osborne's, opposite Dutch Gap, on James River, in Chesterfield.....	21	310,000
4.	Norfolk and Petersburg, March 17, 1851; Norfolk, Nansemond, Isle of Wight, Surry and Prince George, ...	81	2,353,857
5.	Orange, Alexandria and Manassas; Orange and Alexandria, March 27, 1848; Orange, Alexandria and Manassas, February 14, 1867; Fairfax, Culpeper, Orange, Prince William, Fauquier, Albemarle, Nelson, Amherst and Campbell,* Warren and Shenandoah:† * To Lynchburg..... † To Mount Jackson.....	148.3 77.7	7,182,012 3,322,165
6.	Petersburg, February 10, 1830; Dinwiddie, Sussex and Greensville: To Weldon..... To Gaston.....	61 18	1,411,762
7.	Piedmont, March 27, 1862; from the Dan River bridge, on the Richmond and Danville Railroad to the North Carolina line (extended to Greensborough, North Carolina,) Pittsylvania.....	6.3	177,354
8.	Richmond and Danville, March 9, 1847; Chesterfield, Powhatan, Amelia, Nottoway, Prince Edward, Charlotte, Halifax and Pittsylvania.....	140.5	4,929,000
9.	Richmond, Fredericksburg and Potomac, February 25, 1834; Henrico, Hanover, Caroline, Spotsylvania and Stafford.....	75.5	2,297,932
10.	Richmond and Petersburg, March 14, 1836; Chesterfield.....	22.2	1,011,754
11.	Richmond and York River, January 31, 1853; Henrico, New Kent and King William.....	38.3	1,055,286
12.	Seaboard and Roanoke, Portsmouth and Roanoke, March 8, 1832; Seaboard and Roanoke, February 27, 1846; Norfolk, Nansemond and Southampton.....	80	1,797,787
13.	Southside, March 5, 1846; Prince George, Dinwiddie, Lunenburg, Nottoway, Prince Edward, Appomattox, Campbell and Amherst.....	123	3,673,635
14.	Virginia and Tennessee, March 24, 1848; Campbell, Bedford, Roanoke, Montgomery, Pulaski, Wythe, Smyth and Washington.....	204.2	7,190,550
15.	Winchester and Potomac, April 8, 1831; Frederick, Clarke and Jefferson.....	32	906,353
Total length in miles and cost.....		1,371.4	45,248,331

Average cost per mile \$32,994.

* Prepared from statistics by Col. Thomas H. Ellis and from information furnished by Col. E Fontaine, President Chesapeake and Ohio Railroad.

The like cost of railways in Maryland, Pennsylvania, New York and the Middle States is about \$53,000,* and in England \$175,000.

This statement does not include the Alexandria and Washington Railroad, or the Roanoke Valley Railroad, neither of which is at present in operation. The latter cost \$482,612. Nor does it include the Northwestern and other railroads in West Virginia built by Virginia before the war. The cost of reconstruction since the close of the war is also included in the aggregate cost.

The railroads projected and for which charters have been granted are: (see Map of Virginia.)

NAME,

With Approximate Length and Maximum of Authorized Capital.

No.	Approximate Length.	Capital.
1.	Alexandria, Loudoun and Hampshire; 95 miles, to be extended from Leesburg to the Potomac River at or near Paddytown..	\$1,800,000
2.	Chesapeake and Ohio; to be extended 225 miles from Covington to the mouth of the Big Sandy River. To be completed to the White Sulphur Springs by June, 1869.....	26,600,000
3.	Clinch Valley; 125 miles from a point on the Chesapeake and Ohio Railroad, near the mouth of the Greenbrier River, to a point on the Virginia and Kentucky Railroad, in Scott County,	2,000,000
4.	Coalfield and Tide-Water; 23 miles from Coalfield, in Chesterfield County, to Bermuda Hundreds, on James River.....	500,000
5.	Eastern Shore; 95 miles, from a point on the Virginia and Maryland boundary line, on the Eastern shore of Virginia, to some point on the Chesapeake Bay, in Northampton County,	2,000,000
6.	Elizabeth River; 20 miles from Kane's landing, on the Elizabeth River, to a point at or near Bunch Walnut's landing, on the Northwest River, leading into Currituck Sound.....	25,000
7.	Fredericksburg and Gordonsville, with authority to extend to Charlottesville; total 60 miles.....	1,460,000
8.	Lynchburg and Danville; 55 miles.....	2,500,000
9.	Norfolk and Great Western; 380 miles, from Norfolk via Danville, to some point on the Virginia and Tennessee Railroad, not east of Glade Springs.....	10,000,000
10.	Orange, Alexandria and Manassas; to be extended 20 miles(?) from Mount Jackson, in Shenandoah County, to Harrisonburg, in Rockingham County—now nearly completed—increased..	1,000,000
11.	Potomac; 45 miles from Fredericksburg to Alexandria.....	2,000,000
12.	Potomac and Alexandria; 8 miles from a point on the Potomac River, opposite Georgetown, to Alexandria.....	1,000,000
13.	Rappahannock and West Point; 15 miles from a point opposite West Point, on the Mattaponi river, to the Rappahannock river	1,000,000
14.	Roanoke Valley; 30 miles from Clarksville, in Mecklenburg County, to the North Carolina line.....	430,000
15.	Richmond and Lynchburg; 70 miles.....	2,000,000
16.	Richmond and Newports News; 70 miles.....	3,000,000
Carried forward.....		57,315,000

* H. V. Poor.

No.	Approximate Length— <i>Continued.</i>	Capital.
	Brought forward.....	57,315,000
17.	Saltville and Coalmine; 60 miles from Saltville, in Washington County, through the counties of Russell and Wise, to some suitable point on the Kentucky line.....	1,000,000
18.	Shenandoah Valley 160; miles from Harper's Ferry to Salem, with several branches*.....	4,000,000
19.	Valley; from Harrisonburg to Salem 111 miles.....	3,000,000
20.	Virginia and Cumberland Gap; 100 miles from Cumberland Gap by way of Saltville and the Plaster Banks to a point on the Virginia and Tennessee Railroad.....	2,000,000
21.	Virginia and Kentucky; 80 miles from Cumberland Gap to Abingdon or Bristol, with a branch of such length as may be necessary to bring out coal from the counties of Wise, Buchanan and Russell.....	4,000,000
22.	Washington and Laurel; probable length not ascertained† from Abingdon or Glade Spring, on the Virginia and Tennessee Railroad, to a point on the Tennessee line, on the Laurel Mountain.....	5,000,000
23.	Winchester and Strasburg; 18 miles.....	600,000
24.	Wytheville and North Carolina; 65 miles, passing through Carroll County to the Virginia State line.....	1,500,000
	Total authorized capital.....	78,415,000

CANALS.

1. Albemarle and Chesapeake, connecting the Chesapeake Bay with Currituck, Albemarle and Pamlico Sounds and their tributary streams. Length of canal in Virginia, $8\frac{1}{2}$ miles; length in North Carolina $5\frac{1}{2}$ miles; total length of canal and river navigation 70 miles, with only one lock—220 feet long by 40 feet wide.

2. Alexandria Canal, 9 miles.

3. Dismal Swamp, $28\frac{1}{2}$ miles.

4. Kempsville, 9 miles.

5. James River and Kanawha, from tide-water at Richmond to the town of Buchanan, 198 miles, with branches from Columbia to Stillman's Mill, on the Rivanna River, 5 miles; and from Point Cabell to Lexington, on the North River, 18 miles; total cost of construction of this canal and its connections \$10,436,869.

In addition to these artificial lines the navigation of several of the rivers of the State, to wit: the Rappahannock, Rivanna, Roanoke, Slate, Upper Appomattox, Willis' and others has been improved by means of locks and dams, at a considerable expense—

* This road is not projected on the map. Its route is nearly the same as the Valley Road

† Not on the map.

not to speak of similar improvements in West Virginia, on the Coal, Guyandotte, Kanawha, Little Kanawha and Monongahela.

These lines are, as a glance at the map will make obvious, well put in. They connect important points, and are for the most part intended to bring isolated regions in our own and the neighboring States, into commercial connection with the tide-water ports of Virginia, and give them practically, all the advantages for trade and traffic to which their geographical and natural position entitles them.

THE NORFOLK AND GREAT WESTERN RAILROAD.

This line is intended to intersect the Virginia and Tennessee Road near Bristol, and to shorten the distance thence to Norfolk some fifty miles. This road will make tributary to it a large and fertile region in Virginia and North Carolina that is now untapped, and which abounds in the most useful minerals, water-power and manufacturing facilities. Its agricultural resources also are great. The soil and climates which produce the finest tobacco that is grown in the State lie along the route of this road. The lands here are very fertile and yield annually to cereals the most abundant harvests.

THE LYNCHBURG AND DANVILLE RAILROAD.

This work is intended to cross the same belt of country and to intercept at Lynchburg, the great lines of internal improvement which are intended to connect the "heart of the Great West" with the tide water harbors of the Chesapeake.

Lynchburg is extensively engaged in the manufacture of tobacco, and this road will largely increase the supplies for her factories.

In glancing thus rapidly at the physical features and adaptations of different positions of the State, it is worthy of remark that the climate of Lynchburg seems to give it especial advantages in the tobacco business; for the tobacco put up there is said to derive peculiar virtues from the salubrity of the air alone—owing probably to the low dew point and less humid state of its atmosphere when compared to that of the tide water country.

THE VIRGINIA AND KENTUCKY RAILROAD.

This railway is intended to run through the extreme south-

west corner of the State, and is calculated to benefit Kentucky even more than Virginia; yet Virginia, before the war, offered to pay out of her own treasury, \$1,500,000 towards its construction, provided, Kentucky would lead it on through her borders till it reached the banks of the Ohio and Mississippi rivers. Work had already been commenced upon it when the war broke out. The State is now a "Military District," she has no Legislature and is without a voice, and, therefore, has no means of making good any of her pledges or of redeeming any of her promises made in times gone by.

THE LOUDOUN AND HAMPSHIRE ROAD.

This railway was found by the war in its present uncompleted state—as was also the "Roanoke Valley." The work upon both has since the war been suspended; indeed, the latter is not now in use.*

THE VALLEY RAILROAD

Has its books of subscription now open with fair prospects of the stock being taken. It runs longitudinally through that famous "calcarious valley" which Volney thought a "garden spot" and called the granary of the country.† It is exceedingly fertile and abundant in resources. It is a fine grain and grass growing country. It produces the finest of wheat, and preference is given to the flour from it for the United States Army over that of any other part of the Union. It is well watered, thickly inhabited, and profitably cultivated. Its mountain streams afford ample water-power for thousands of factories, and its hills are stored with marbles, iron and other valuable minerals. The proposed route for this road with its connections will be better appreciated by examining the map of the State.

THE TWO GREAT ROUTES—ONE TO THE NORTH-WEST AND THE OTHER TO THE SOUTH-WEST.

These are the two routes which are of such national importance. They are represented the one by the Chesapeake and Ohio Rail Road and the James River and Kanawha Canal, as far as the

* Report of Board of Public Works, 1866.

† Volney's View, 1804.

Ohio; the other by the James River Canal, as far as Lynchburg—and thence by the Virginia and Tennessee Rail Road as far as Saltville, near Abingdon, Virginia; and thence down the Holston River, one of the tributaries of the Tennessee, and so on down this river to its mouth by one fork, and by its other through the projected Coosa canal into the Alabama, and down to the Gulf of Mexico.

The geographical position and physical relations of Virginia invest these routes with great interest and make them of national concern. They will bring in connection with the Chesapeake Bay, 16,000 miles of navigable rivers in the Mississippi Valley, and 21,000 miles of railroad already in operation there and make Hampton Roads the chief port for all the commerce that is moved upon them for foreign markets.

It is necessary, therefore, to treat of these relations in several of their most important aspects, and to show at least some of the great interests of state to be advanced by the enlargement and completion of these works—for without them neither the vast physical resources of Virginia or the true strength of the country ever can be developed.

The route between Norfolk and Bristol has a single track railway already in operation throughout its entire length; reaching, with its connections, the Mississippi river in the West and in tide water Virginia the cities of Petersburg, Richmond, Fredericksburg, West Point and Alexandria.

The other route which leads towards the North-west has already a railway partly finished which is intended ultimately to reach the Ohio River under the name of the Chesapeake and Ohio Railroad; it is in operation with a single track from Richmond to Covington, 205 miles. Thence a section of 20 miles in length is under contract, to be finished by next Summer as far as the celebrated White Sulphur Springs, the fashionable watering place for the south, and the most charming place of Summer resort in the whole country.

This single track has to be extended 200 miles further in order to reach the Ohio River. For the means required to do this, a loan of \$10,000,000 is now under negotiation, and the whole road

from Richmond to the Ohio with all its property and franchises is pledged as a first mortgage to secure lenders. The proposition has been received with marked favor both in New York and London.

This road runs through a country beautiful, fertile and rich in coal and iron, salt and petroleum and other valuable minerals. Though in operation but for half the distance, and with a single track between Richmond and the Ohio, its receipts are already well nigh sufficient to meet the interest on the proposed loan. The security, therefore, is rightfully regarded as most ample, and the early completion of one track of this long coveted and much needed improvement may be now confidently expected.

The James River and Kanawha Canal Company—the commercial supplement of this road, was incorporated in March, 1832, and the work of construction commenced in 1836.

The canal was to be 5 feet deep; 30 feet wide at the bottom, and 50 feet at the water-line on top, with locks 100 by 15 feet in the clear.

This work is finished also for nearly half the distance: viz., 197 miles from Richmond to Buchanan, at the cost of \$10,436,869, leaving 203 miles to be completed.

The requirements of commerce, the necessities of the country, and the interests of the North-west especially have attained such proportions, that they now urgently require the enlargement and completion of this canal, also the construction of a double line of rails across the mountains, from the present terminus of the canal to the head of navigation on the Kanawha River, to serve while the canal is in process of completion for the temporary accommodation of the Western produce which otherwise must rot in the granaries or be wasted there for the want of the requisite facilities for getting it to market.

A glance at the map of the United States, will of itself suggest the great national importance, both of this road and its accompanying canal, and of the railway line with its water-links from Norfolk via Petersburg, Lynchburg and Bristol, thence to Tennessee and the States of the lower Mississippi Valley.

The connections of these two routes with the navigable waters

and the lines of internal improvement in the South-west, the West and North-west, show more palapably than words can tell how important and commanding to the whole country are the advantages afforded by the geographical position of Virginia for extending the commerce of the West and increasing the national prosperity.

With this picture before the eye of the political economist and the statesman, nothing can be said to make more clear the national importance of these two lines of improvement, or more striking, the vast extent of back country that is naturally tributary to the Tide Water harbors of Virginia.

The Mississippi Valley is the largest river basin but one in the world. It is the most fertile and productive, and the nearest and best way through the greater portion of it, leads out to the sea between the capes of the Chesapeake.

NORFOLK AND NEW YORK COMPARED AS TO THE COMMERCIAL ADVANTAGES DUE TO THEIR GEOGRAPHICAL POSITION.

Geographically considered, the harbors of Norfolk or Hampton Roads and New York occupy the most important and commanding position on the Atlantic coast of the United States. They are more convenient to the Ocean than Baltimore, Philadelphia and Boston are, because they are not so far distant from the sea.

Depth of water that can be carried out, and distance of the sea from

Hampton Roads,	dist.	15 miles	depth	*30 feet
New York,	"	30	$3\frac{3}{4}$ fth.	23 "
Boston,	"	100	$3\frac{1}{2}$ "	21 "
Philadelphia,	"	100	$3\frac{3}{4}$ "	23 "
Baltimore,	"	160	$2\frac{3}{4}$ "	16 "

Between the three last and the sea, there is a tedious Bay navigation, but each of the first two is situated upon a well sheltered harbor that opens right out upon the sea with beautiful offings, those of Hampton Roads surpassing the others in all the requirements of navigation both as to facility of ingress and egress, certainty of land fall, depth of water and holding ground.

Commercially, also, these two harbors occupy the most choice

* Draft for vessels of any size.

positions with regard to the back country—positions which give them more natural advantages as the great outlet for our trade and commerce than those that are offered by any other of our seaport towns on the Atlantic Ocean.

These advantages grow not only out of the conveniences they possess as havens of the sea, but also out of their geographical position upon its shores, as well as their situation with regard to the back country that is naturally tributary to each.

New York has made the most of her geographical position, and, by availing herself of the advantages offered by it, has made herself the commercial emporium of the new world. Her internal improvements have done this. But they no longer satisfy the demands of the people, the wants of the West, or the requirements of commerce.

Norfolk the superior of New York in all the natural advantages of back country, harbor, sea and commercial situation, has slighted internal improvements, and now as an emporium of trade lags at an immeasurable distance behind New York. The better to appreciate the natural advantages of Norfolk, let us contrast them with those of New York and see the means by which New York has secured in such full measure the benefit of her natural advantages.

THE CHESAPEAKE—ITS COMMERCIAL AND HYDROGRAPHIC ADVANTAGES.

The Chesapeake Bay is a “king’s chamber” in the bosom of Virginia which no beligerent may enter with other than good intent. It affords the finest harbors on the coast, and moreover, they are those farthest to the north on the Atlantic coast that are never obstructed by ice. It is Virginia water—for it passes through her borders to the sea and enters it between her own capes. Just between these capes and under their shelter, lie Hampton Roads and Lynn Haven Bay—the “Spit Head” and the “Downs” of America.

To the South all the sea port towns as far as the reefs of Florida have their harbors obstructed by bars over which the larger vessels of commerce can never pass; and the extent of back country naturally tributary to them, is in comparison with that tributary to the sea port towns of Chesapeake Bay, very small.

To the North the harbors are liable to obstructions by ice every Winter, and their approaches are often endangered by the fogs which prevail in those latitudes.

This noble sheet of water with its spacious harbors is large enough to accommodate shipping, sufficient to afford transportation for all the products and merchandise of the West were they a thousand fold more abundant than they are; and it is the most convenient point on the entire coast for distributing them north and south along the Atlantic seaboard, or for sending them to markets beyond the sea.

As for back country considered with regard to extent, fertility and material resources, there is no sheet of water in the world that has tributary to it such resources of commercial wealth as the Chesapeake with its fine harbors.

THE BACK COUNTRY THAT IS NATURALLY TRIBUTARY TO NEW YORK
AND NORFOLK—COMPARED.

Naturally and by reason of the combination of physical circumstances which favor Virginia, Norfolk is the best seaport town for most of North Carolina and Tennessee, besides large portions of northern Georgia, Alabama, Mississippi and the Southwest; and a proper system of internal improvements to the Southwest wisely encouraged by the nation would make it so in reality, so far at least as trade with Europe and the Northern portions of the United States are concerned.

In like manner, and as for New York, proper lines of internal improvement leading from Tide Water Virginia to the Northwest would make Norfolk a much better and cheaper seaport than New York, for Kentucky, Ohio, Indiana, Illinois, Missouri, Iowa, Kansas, Nebraska and Dakota, with portions also of Montana, Minnesota and Wisconsin.

Each of these two grand lines of improvement the one to the Northwest the other to the Southwest were commenced many years ago by Virginia and her sons unaided and alone. They were carried on according to their ability at the time, and are now in a state of forwardness. Both national and State interests now require their early completion.

In order to show at a glance the back country to the Northwest that is *naturally* tributary to Norfolk rather than to New York, and how it is *geographically* nearer;—and the back country to the Southwest that with proper internal improvements would make the Tide water harbors of Virginia its best and most convenient seaports for trading with Europe and the Northern cities, the annexed outline map has been kindly prepared at my request under the superintendence of Col. Williamson, Prof. Engineering Virginia Military Institute.

Two points, each equidistant from New York and Norfolk are taken; one on the sea-coast the other on the Lake frontier, and a line is then drawn through them in such a manner that any point along it shall be equidistant between these two cities; and all places to the east of it be nearer to New York, and to the west of it, nearer to Norfolk.

It will thus be seen that Pittsburg and Wheeling, Columbus and Toledo, with the whole States of Indiana, Illinois, Iowa and Nebraska, with all the country to the south of them, are geographically nearer to the Capes of Virginia than to Sandy Hook.

All this back country that lies west of the Alleghany Mountains and north of Tennessee is now *commercially* tributary to New York, Philadelphia or Baltimore, rather than to Norfolk. It has been made so by the railways and *canals* which these cities have constructed from their wharves to the great Valley and mountain slopes of the West.

Like works passing through Virginia into this magnificent back country would secure to her seaport towns their natural advantages, line their wharves with merchandise and crowd their docks with shipping as they have done those of New York, Philadelphia and Baltimore.

The connection of the Chesapeake with this back country is an important subject and one which bears so directly upon the material prosperity of the State, and is so allied to those vast physical resources which we are seeking to develop that it ought not in a report like this to be passed lightly over.

It involves the whole question of internal improvement, State

and National, at least so far as such works, whether lying wholly or only partly within the State, bear in their commercial and economical effects upon the welfare of her people or the development of her resources. It touches commercial interests in China and Japan, as well as in Great Britain, France, Holland and Germany.

Map I. shows the railways and canals of Virginia with their connections, present and prospective. It shows those that are in process of completion, and those that are projected and in contemplation.

Norfolk, be it remembered, with its deep waters, spacious harbors and free outlet between the Capes of Virginia to the sea, occupies geographically what the early discoverers thought would be, and what physical geography claims, *is*, the most commanding commercial position along the whole Atlantic seaboard of the United States. Its natural advantages make it so.

Why, then, it may be asked, have New York, Philadelphia and Baltimore, each in a position less favored by nature, so far surpassed Norfolk in their commercial success? The answer is, because they at an early day built railways and canals to connect them with the West.

Through Virginia lie the highways to the Sea, and in the Chesapeake Bay the ports of the West.

COST OF TRANSPORTATION BY RAIL AND WATER.

The rates of freight by sea, river, canal and rail are ever varying. Between 1830 and 1861 the tolls of the Erie Canal were reduced from \$10.22 to \$1.40 the ton. And it is only by taking the means of large aggregates that a general average can be established. To arrive at such an average, recourse has been had to a great many official documents and other sources of authentic information.*

* Such as, "Special Report on Coal," made in 1865 through the State Engineer to the Senate of New York by S. H. Sweet, Deputy Engineer.

"Annual Statement of the Trade and Commerce of Chicago," by the Board of Trade.

"The Central Water Line from the Ohio River to the Virginia Capes," by the President and Engineer of the James River and Kanawha Canal Company.

"Annual Report of Chamber of Commerce of New York."

These have been consulted for this and other statistical information, and by them it appears that freight beyond seas varies from 1 to 5 mills per ton per mile—average $1\frac{1}{2}$ mill.

Coastwise, from 2 to 4.—Average for two years between 40 points varying from 100 to 1,200 miles apart, 4.8 mills.

From Chicago to Buffalo by Lake in 1866 and 1867 they varied by yearly average on wheat and corn from 2.5 to 4.76 mills per ton per mile, and averaged 3.7, or a general average on provisions and bread-stuffs of say, 4 mills.

By barges on rivers the average is 4 mills per ten per mile.*

On the Erie Canal the expenses averaged (in ten years beginning with 1857) 5.48 mills for carriers' charges and 5.52 for tolls†—total 11. They are now 9.6 mills, including both tolls and freight, the tolls averaging at least 4 mills.

Ditto, "Auditor of the Canal Department, or the Tolls, Trade and Tonnage of New York, 1867."

"Auditor General's Reports upon Railways and Canals of Pennsylvania, 1867."

Ditto, "Ohio."

"Commerce and Navigation of the United States" Bureau of Statistics.

"Agricultural Report, 1868," by United States Commissioner of Agriculture.

"Maury's Sailing Directions."

"Annual Report of the Philadelphia Board of Trade for 1868," by A. J. Perkins.

The Annual Reports of the several Railway Companies of Virginia and other States, &c., &c.

* The cost of *towing* barges laden with coal down the Hudson from Albany to New York is $1\frac{1}{2}$ mill per ton per mile.† But according to the official Report of the Auditor in 1867 the average freight paid on grain from Albany to New York was 2.4 cents the ton the mile.

As to the estimated charges of freight to be made by barges on the Western rivers when this water line through Virginia is opened, it is supposed that the freights by Erie Canal, exclusive of tolls, would afford a better criterion. The rivers have no locks to delay, the barges will be towed by steam, and the rivers are wider and offer less resistance than canals. The carriers' charges on the canal, averaged from 1864 to 1866, 5 mills per ton per mile. We assume that it can be done on Western rivers at 4 mills per ton.

† Lorrain.

‡ S. H. Sweet.

The Erie Canal is exceptional on account of its enlarged size. Before its enlargement the charges for freight and tolls together varied from 2.1 cents to 3 cents per ton per mile.

The average freights, including tolls on 13 principal canals in New York and Pennsylvania, including the Erie, and the Chesapeake and Ohio canals among them and the aggregate length of all of which is 2,404 miles, varied during the years 1861 and 1864 from 5 to 35 mills per ton per mile, averaging $13\frac{3}{4}$ mills, or $1\frac{1}{2}$ cents. This we shall assume as the average rate charged on the canals of Ohio, Indiana and Illinois.

The average rate of freight for 11 years (from 1852 to 1863) on the New York Central and the Erie railways was 2.4 cents per ton per mile.

The average rate in 1862 and 1863 on 13 of the principal railways in New York, having an aggregate length of 2,063 miles, was 2.86 cents per ton per mile. Ditto of 18 in Pennsylvania, with an aggregate length and cost of 2,661.7 miles and \$233,672,545 $\frac{17}{10}$ was 3.7 cents—say general average of railroad freight for agricultural produce and general merchandise—3 cents the ton the mile. The rate on most railways for coal is less; that on the Philadelphia and Reading Railroad and others being 1.6 mill per ton per mile, and even less.

In procuring data to estimate the charges for freight and tolls through the Virginia line to the Ohio the present rates by Erie Canal and Lakes to New York are taken as the standard.

All produce passing from the navigable waters of the Mississippi by lake and canal to New York will have to be handled four and much of it six times, viz: twice for loading and twice for unloading in every case on the Lakes, for the reason that canal boats cannot navigate them. Consequently when a canal boat arrives at Chicago, Toledo or Cleveland, it has to be unloaded and its cargo put on board a Lake vessel, which in turn has on arrival in Buffalo to transfer its cargo to a canal boat. This boat can be towed by a steam tug from Albany to New York.

But when cargoes are brought by steamers on the western rivers to the canals leading thence to the lakes, the cargoes have to be

transhipped to canal boats, for the barges cannot pass those canals. This makes the third transshipment for all such produce.

But aiming to underrate rather than overstate the advantages offered by these Virginia lines, only two transshipments are taken into the account, and 25 cents per ton only allowed in the estimate for each transfer, or 50 cents in all, including—in each—both loading and unloading.*

To tow these canal boats or barges laden with *coal* from Albany to New York costs $1\frac{1}{2}$ mill per ton per mile. A charge of 4 mills per ton per mile ought, it is assumed, to be large enough surely to cover all expenses of barge freights on rivers and pay profits.

The barge business on the Mississippi is new. It is already cheaper than steamboat transportation, and as it increases, and companies multiply in numbers, it will become cheaper yet. At present the steamboats are charging from 40 to 60 cents on flour per barrel from St. Louis to New Orleans. The barges take it for 5 cents less, which shows that they can afford even at present, to transport agricultural produce for *less* than three mills per ton per mile.

The average freight on the Erie Canal exclusive of tolls, is as before stated 5 mills. River transportation in barges drawn by steam tugs ought surely to cost less than canal transportation towed by horses. Moreover, it has other advantages already enumerated over canal transportation. Therefore let it be assumed that the river transportation by barges will be 4 mills per ton per mile instead of $3\frac{1}{2}$ its present average.

It is moreover taken for granted that the barges once loaded on the Mississippi and its tributaries with freight for Hampton Roads via James River Canal will, when this canal is enlarged and completed, serve as canal boats and will not be unloaded by the way.

Thus a barge receiving a cargo in Kansas City or Omaha from the Pacific Railway for Europe or any of our Atlantic seaports, via the Virginia water line, will not break bulk until it has arrived

* In Philadelphia 75 cents per ton is allowed by the Board of Trade for loading alone. The rates of commission and storage adopted by the Philadelphia merchants.—*P. 142 Phila. Board of Trade, 1868.*

in Richmond, Norfolk or Hampton Roads. Therefore river freights are set down via Virginia line at 4 mills per ton per mile, and canal at 5 without any allowance for transshipment or tolls.

If it be assumed that the Virginia water-line is not to be a national work—that the Western farmers are still to be taxed for the right of way to the sea, and that this line is therefore to be constructed by the State or by individual enterprise, then the rates herein given as what Western farmers will have to pay via the Virginia line must be increased \$1.94 per ton, or $5\frac{1}{2}$ cents per bushel.

The average rate of freight in mills, per ton per mile, by rail and water may therefore be stated thus :

By sea (long voyage).....	1.½
Coast-wise.....	4.8
River (barges).....	4
Erie Canal (including tolls).....	9.6
Jas. River and Kanawha Canal (without tolls).....	5
Canals generally.....	13.7
Railways.....	3 cts.

Great Circle or Air Line Distances from Certain Commercial Centres in the West to New York and Norfolk, (computed by Capt. Brooke, V. M. I.)

From	to	New York.	Norfolk.	Difference by Air Line in favor of Norfolk.
		<i>Miles.</i>	<i>Miles.</i>	<i>Miles.</i>
Omaha		1,149.7	1,101.3	48.4
Kansas City.....		1,095.6	1,008	87.6
St. Louis		878	775.6	103.4
Grafton.....		890.7	794	86.7
Cairo.....		859.7	719.3	140.4
Cincinnati		566	471.8	94.2
Chicago		509	694	15
Memphis.....		955	778	177
New Orleans.....		1,168	925	243

Now, if we compare the distances of these same points by present water routes to New York via the Lakes or the Gulf, with their distances, via the proposed water route to the Tide Waters of Virginia, we shall see that the difference in favor of Norfolk is still more striking.

COMPARISON OF DISTANCES BY PRESENT AND PROPOSED ROUTES.

From	To		Difference in favor of Norfolk.	From		Difference.
	New York via Lakes.	Norfolk via Virginia Water Line.		New York via Gulf.	Norfolk via Ala. & Tenn. Rivers.	
Omaha.....	Miles. 2,699	Miles. 2,373	Miles. 326	Miles. 1,700	Miles. 1,537	Miles. 163
Kansas City.....	2,355	2,029	326	1,628	1,413	213
Mouth Missouri River.....	1,899	1,573	326	1,991	1,050	941
St. Louis.....	1,919	1,553	366	2,500	1,548	962*
Grafton.....	1,876	1,596	280			
St. Paul.....	2,119	2,344	766			
Cairo.....	2,369	1,603	766			
Memphis.....	1,170	. 966	204†			
Louisville.....	1,028	824	204†			
Cincinnati.....						

* Via Mississippi, Tennessee and Holstein Rivers and Saltville.
† Via Miami Canal, Toledo and Erie Canal.

Supposing the James River Canal to be completed to the Kanawha, total 400 miles—and it is already in operation for nearly half that distance—then this Virginia line will bring Cincinnati 204 miles nearer by water to Norfolk than it is now via Miami Canal and Lake Erie to New York, with 219 miles less of canal navigation.

It will bring St. Louis 366,—Omaha and the Kansas terminous of the Pacific railway and all places on the Missouri River 326, miles nearer by water to Norfolk than they now are to New York, with 50 miles less of canal navigation by the Lake route, and 68 miles of distance, and 417 miles of canal navigation by the Wabash Canal. These two routes are, the one the cheapest, the other the shortest, of existing water routes from those parts to New York.

The long and cheap route leads via Chicago, the Lakes and Erie Canal with 1,050 miles of Lake navigation: the shortest route is through the Wabash Canal via Toledo and with 250 miles of Lake navigation but with 417 more of canal than the Virginia route. But the small extent of lake and the great length of canal navigation, makes this the dearer of the two—through freight by it to New York averages \$13.50 the ton. The former is the great through route and it is the one which the Virginia route is destined to supplement. Let us compare it and not the more costly lines either by railway or canal with the Virginia line route via James River and Kanawha Canal.

From the mouth of the Illinois River, via the Michigan Canal and the Lakes to Buffalo, and thence by Erie Canal and Hudson River to New York the distance is 1,876 miles, and the freight from the mouth of the canal to Chicago, exclusive of transshipment at La Salle, is \$2.27 per ton of 2,000 pounds.

Freight from Chicago by Lake to Buffalo and thence by Canal to New York.

The Canal Auditor in his annual report of 1867 to the Legislature of New York gives the average freight of each year for 6 years beginning with 1861, on wheat, corn, flour and other merchandise, from Chicago to Buffalo, and thence by Erie Canal and Hudson River to New York.

The lowest monthly average is $1\frac{4}{10}$ mills per ton per mile on corn; and the highest $6\frac{1}{2}$ mills per ton per mile on agricultural produce by lakes.

The mean freight for the 6 years, exclusive of transshipment and other charges was \$3.26 per ton to Buffalo and \$5.56 thence to New York.

Allowing 25 cents per ton for transshipment from canal to lake at Chicago, and the same from lake to canal at Buffalo, exclusive of commissions and other charges we have \$11.59 as the average charge for freight, tolls and transfer of agricultural produce from the mouth of the Illinois River to New York *when the way is clear of ice.*

This allows nothing for the transfer of cargo at La Salle from river steamer to canal boat.

From the mouth of the same by the Virginia water route the distance is 280 miles less with the saving of 50 miles canal navigation and \$4.73 of expense.

Therefore \$4.73 is the saving per ton in favor of the Virginia line from all places on the Mississippi *above* the mouth of the Illinois.

From the mouth of the Missouri River and all places above on that river the saving is 366 miles in distance, 50 miles canal and \$4.91 expense. Therefore \$4.91 is the saving per ton in favor of the Virginia route from all places above on the Missouri and its tributaries.

From St. Louis the saving in distance is 366 miles, with 50 in canal navigation, \$5.07, in the cost of transportation.

From Cairo, Memphis and all places on the Mississippi and its tributaries that enter below the mouth of the Ohio, the saving in favor of the Virginia route, as compared with the lake route via Chicago, is, in distance 766 miles and 50 of canal navigation, or \$6.13 per ton.

From Evansville on the Ohio at the mouth of the Wabash canal the saving in favor of Virginia, is 68 miles of distance, 417 miles canal navigation, and \$8.30.

From Cincinnati, on the Ohio, via the Miami Canal, Toledo and the lakes, the saving in favor of Virginia is 204 miles in distance, 216 of canal navigation, and \$6.88.

From Portsmouth, on the Ohio, via Cleveland and the lakes to New York, the saving by the Virginia route is 301 miles in distance, and by canal navigation 257 miles, and \$7.25 per ton.

From Wheeling via Baltimore by rail and Bay to sea, the distance is a saving by the Virginia route of \$6.66 the ton, in freight, notwithstanding the distance is 248 miles against it.

From Pittsburg via Philadelphia to the capes of the Delaware by rail and Bay, the distance is 434 miles less than by the Virginia route, but freight is \$5.44 per ton in favor of the latter.

RECAPITULATION.

Savings in Distance, Dollars and Canal Navigation in favor of the Virginia, over the above named New York Water Lines.

Saving in favor of Virginia Route.	Miles.	Canal	Dolls.
From mouth Illinois River and all landings above on the Mississippi.....	280	50	4.73
St. Louis.....	366	50	4.91
Cairo, Memphis and all places on the Mississippi below mouth of the Ohio.....	766	50	6.67
Evansville (Wabash Canal).....	68	417	8.30
Cincinnati (Miami Canal).....	204	216	6.88
Portsmouth (Canal).....	301	257	7.26
Wheeling (Baltimore and Ohio Railroad) to Capes of Virginia.....	-248	R. R. 380	6.66
Pittsburg (Pennsylvania R. R.) to Capes of Delaware....	-434	354	5.44

Thus it appears that if proper advantages are taken of the geographical position of Virginia by completing the James River and Kanawha Canal as a great national work, even though it be not larger than the Erie Canal, but *toll* free, Western produce might be sent to sea through Virginia cheaper than it now is from—

Pittsburg (via Pennsylvania Railroad) at the rate of 16 cts. per bus.			
Wheeling (via Baltimore and Ohio Railroad).....	23	“	“
Portsmouth.....	22	“	“
Cincinnati and Louisville.....	21	“	“
Evansville.....	25	“	“
Cairo, Memphis and all landings on the Mississippi below the Ohio.....	20	“	“
St. Louis and all landings on the Missouri and its tributaries.....	15	“	“
All landings on the Mississippi above the mouth of the Illinois.....	14	“	“

Averaging from 15 to 25 cents, say, an average of 20 cents a bushel upon all grain that is annually produced in the valley drained by the Ohio, the Cumberland and the Tennessee as far as the Muscle Shoals; and in that drained by the Upper Mississippi, the Missouri and its tributaries, and in which the following States wholly or in part are included: Virginia, Pennsylvania, West Virginia, Ohio, Michigan, Wisconsin, Minnesota, Nebraska, Iowa, Kansas, Missouri, Illinois, Indiana, Kentucky, Tennessee and Arkansas.

According to the last report of the Commissioner of Agriculture, these States produced in 1866, no less than one thousand and ninety millions (1,090,000,000) bushels of grain and potatoes alone. Twenty cents a bushel on this is, in round numbers, \$218,000,000.

This it should be remembered, is irrespective of all other domestic produce in those States. It is exclusive of beef and pork, of tobacco, hemp and the fruits of the vineyard, of the products of the orchard, the dairy and the garden; of the yield of the pasture in cattle, herds and wool; of the products of the forest and the river. It is exclusive also of all articles of merchandise that would seek a transit by this route, or be affected by its cheap freight, whether for importation or exportation.

It would not be extravagant to estimate that the gain to the people of Ohio and the States west by the opening of these Virginia routes to the sea, would in less than six months, be more than sufficient to put in between the head of navigation on the Kanawha and the western terminus of the James River Canal, a temporary double track railway for freight, and proceed to complete this canal on the scale of the Erie enlargement, from the Ohio River to Richmond, and so enable this country to recover its lost ground, and to keep pace with France and England in their increasing rate of domestic exports.

It is a remarkable fact that the domestic exports of the United States are falling off, while those of France and England are largely on the increase. Why is this? The population of the United States increases far more rapidly than theirs. Annually, immense areas of new land are subdued and brought under cultivation in the West; whereas there, every foot of ground is already occupied.

The true reason of this falling off is to be found in the fact that the political economists of the country have not duly considered the *geographical* position of Virginia, or that the West is shut out from the sea. It has no way of sending its increasing supplies of agricultural produce to the seaboard; its wheat and corn cannot afford to pay the charges on 1,000 miles of railroad. The Erie and the New York Canals are already taxed to their utmost capacity,

and there is no way of sending off any increased production. The consequence, is that as we are now told officially, grain growers 100 miles west of Chicago cannot afford to pay its way to that city, and also stand the charges thence to New York.

Neither can it afford to descend the Mississippi, meet the dangers of the Florida Pass and incur the expenses of a voyage of upwards of 3,500 miles from its place of production to the wharves of New York when with a little judicious legislation it might get there by a rail and water route of about one-third that distance.

Until these outlets through Virginia be opened, that section of the country must continue to suffer with plethora, and the domestic exports of the country and consequently its foreign consumer to languish.

So pressing and urgent have the demands for new, cheaper, and better outlets from the West already become, that in the course of this survey it may be well worth while to examine and see if it be not practicable to improve the James river itself from Richmond to Lynchburg, as the navigation of the Ohio is being improved at the falls of Louisville, so as to make it navigable for steamboats of the largest class from Hampton Roads to Lynchburg. The two great through routes advocated in this report, one leading up the Holston, the other up the Kanawha, and down to the James river, will meet at Lynchburg and tax the capacity, not only of rail and canal, as the Erie canal is now taxed, but of the James river itself thence to tide-water.

THE TERRITORY CEDED BY VIRGINIA.

Now when it is remembered that of this immense back country, an area comprehending no less than 206,640,000 acres of its best lands was a gracious gift of Virginia to the nation, that one of the conditions of the grant was, that it should be applied for the *use* and benefit of *all* the States, the question arises, how could a portion of it be better applied than by appropriating it for the construction of these improvements on a scale becoming the dignity of the nation and the requirements of the West, and of making them free alike to all these States, charging tolls enough simply for management and repairs? A general charge of 10 cents a ton or 1 cent a barrel on flour as a through toll would be ample for this.

According to the Statistics uttered by the Agricultural Bureau in Washington, the average yield of these lands in grain and potatoes, is 31 bushels to the acre. It has been shown how by giving the cultivators of these lands a national highway through Virginia to the sea, the expenses of sending that produce to market would enhance the value of their staples to the farmers there from 15 to 25 cents the bushel. In other words, that it would increase the average rental of lands there under cultivation, at least \$5 per acre.

It would be difficult to find a more striking illustration as to the benefits which proprietors and cultivators of the soil derive from all works of improvements which reduce the cost of transportation.

Surely the inhabitants of this back country have failed to comprehend the extent to which their interests were bound up in the geographical relations and physical conditions of Virginia, else they would long ago have demanded the completion of these improvements.

Who will get the benefit of them?

Clearly the farmer most of all. Whether he sells his grain to his factor on the seaboard or to his next door neighbor, he asks the same. It is the price of produce in the great commercial centres, less the expense of getting it there, that regulates the price at home.

Nor is this all: none of the New England States produce bread-stuffs enough for home consumption. The opening of these Virginia improvements would keep the people there boaintfully supplied at all times; it would benefit consumer as much as producer, and bring Boston, practically for commerce, 100 miles nearer than she now is by Sound and Lake and Erie Canal, to the great centres of trade and traffic in the West, and 500 miles nearer to Montgomery, the heart of the cotton region, than she now is via Alabama river, gulf and sea, or by any other water route.

From the mouth of Ohio to Boston via Chicago, lakes, New York and Long Island Sound, the distance is 2,414 miles; via Virginia water line and railroads 1,901 miles; from Montgomery, Alabama, via Alabama River and Florida Pass 2,207 miles; via

Southwestern line—the composite route—via canal, river and rail, through Virginia and Hampton roads, 1,600 miles.

So it is not only the people of the South-western, of the Central and of the North-western States that are to be benefitted directly and personally by the completion of these two Virginia routes, but the people of the New England States and of the whole country.

According to the official Report of the United States Commissioner of Agriculture the Amount of grain produced in the year 1866 (the latest year of the Report) in certain of the States that are, by their geographical position tributaries to this route, was 751,164,240 bushels corn, 256,673,537 bushels wheat, oats, rye and barley. Total, 1,007,837,777 bushels. Home value \$749,319,601.*

The Virginia line is clearly the route for the farmers of these States, and Hampton Roads their seaport. The grain is but a portion of their produce. There is besides, cotton, sugar and rice; hemp, tobacco and the root crops; the products of the mine, the pasture, the forest and the factory, with fruits and vegetables in great variety and abundance.

Including buckwheat these States alone, which are blocked out from the markets of the world, now by the frosts of winter, now by the heavy charges of the railroad for transportation, and now by the dangers and expenses of the Florida Pass, produce two-thirds of all the corn of the country. Are the producers of this grain aware that for the right of way to the sea via New York canals they are required to pay double? That they have to pay nearly twice as much toll for passing their stuff eastward, through the Erie canal as the merchants and manufacturers of the East are required to pay for sending their wares through it to the West?

The farmers of the West with their breadstuffs, like the planters of the South with their cotton, have to pay freight both ways though they use only one.

Here is (in confirmation of the statement that they pay for the empty vessels that come and fetch) an extract from the official table of tolls and freight exacted on the Erie canal from 1830 to

* Table A. Agricultural Report, 1866.

1866 inclusive. The statement is given in averages for four years at a time.

<i>Average Charge on "down" Freight per barrel, 216 lbs. from Buffalo to Albany.</i>					<i>Average Charge on "up" Freight from Albany to Buffalo per 100 pound.</i>				
From	to	Toll. Cents.	Freight. Cents	Total Cents.	From	to	Toll. Cents.	Freight. Cents.	Total. Cents.
1830,	1833	51	44	95	1830,	1833	49	45	94
1834,	1837	35	42	77	1834,	1837	33	57	90
1838,	1841	35	40	75	1838,	1841	33	45	78
1842,	1845	35	27	62	1842.	1845	33	26	59
1846,	1849	31	33	64	1846,	1849	24	15	39
1850,	1853	25	29	54	1850,	1853	19	11	30
1854,	1857	25	20	52	1854,	1857	15	10	25
1858,	1861	19	22	38	1558,	1861	6	6	12
1862,	1866	23	27	50	1862,	1866	6	7	13

These figures are eloquent in their mute significance; they are trumpet-tongued against the policy of permitting a great national highway from the interior to the sea to become a monopoly either in the hands of a State or in the power of individuals.

The farmer's produce is obliged to come to market within a certain time or rot on his hands; merchandise is less perishable and more valuable, and there are many routes competing for it. The great State of New York takes advantage of this. She exacts from the farmer for 216 pounds of his stuff (worth only from \$3 to \$8), 23 cents for the right of way through her canal; while she exacts from the merchant for the same weight of his merchandise, worth perhaps from \$500 to \$1,000, a toll of only 13 cents!!

Putting the statement into another shape: The farmers of the West are required to pay 20 or 30 times as much as are the manufacturers and merchants of the East, on the value of what they send to market through the canals of the State of New York. Is that right?

The completion of this water line to Norfolk (it should be national and untaxed) with the capacity at *least* of the Erie Canal would enhance the value of all this produce and merchandise while yet in the hands of the producer, at the rate of from \$4 to \$8 the ton; and this, irrespective of the coffee, tea, sugar and mer-

chandise and products of other countries that would flow back to them through the same channels and with an equal gain.

That "a penny saved is a penny gained;" no one understands better than the farmer, and no one appreciates better than he the advantages of lessening the expenses of going to and returning from market.

The government, by enormous grants of land and princely loans of credit has encouraged the construction of a Railway, now on the verge of completion, from the Mississippi Valley to the Pacific Ocean. If all the articles of domestic export which the United States now send to countries bordering on the Pacific were to be sent by that road, the total value of them would be only about \$17,000,000. The value of Western products annually passing through the New York canals is upwards of \$279,000,000. Last year the through freights from the Atlantic to the West carried by the three great roads, the New York Central, the Erie, and the Pennsylvania, amounted in value to \$405,299,339,* and the gross revenues of each of the three to nearly as much as those products which go via the Capes to foreign markets on the shores of the Pacific are worth. Last year the gross receipts of the Pennsylvania Central were but little short of \$17,000,000; those of the New York Central \$14,000,000; those of the Erie, and of the Baltimore and Ohio each, nearly as much. To encourage this road to the Pacific and ignore these routes from the West through Virginia to the Atlantic, looks like a violation of the laws of political economy, as well as slighting the advantages of her geographical position.

Thus it appears that the geographical position of Virginia is such as to take away from certain lines of trade and travel that lead from the West to her seaport towns, the character of mere State works, and invest them with the dignity and importance of great national highways and commercial thoroughfares, in the construction of which the people of no less than 20 States are as deeply concerned as are her own sturdy yeomen.

ALL GREAT OVERLAND ROUTES REQUIRE TRANSPORTATION BOTH BY RAIL
AND WATER.

The improvements which connect New York, Philadelphia and

* Committee on Roads and Canals, House Representatives.

Baltimore with the interior, show in their workings and by their results what is required for the tide water cities of the Chesapeake Bay and its tributaries. They show, in characters too plain to be mistaken, that the wants of the West, the demands of commerce, and the welfare of the country require both rail and canal to serve the interests involved.

It is held, and correctly, by the New York engineers, where the data are so ample for studying the effect of railways and canals upon industrial prosperity, that there is in the internal trade of the country a large class of goods which always prefer the rail to water, and that no great line of trade and travel can satisfy the requirements of the age or fully meet the demands of commerce, unless it combine transportation both by rail and water lines.

The New York Central Railroad and the Erie Canal run side by side. Neither would be complete without the other. Each is required to do the work that the other cannot perform. Each supplements the other.

It is worthy of notice, in this connection, how in New York and Pennsylvania, where canals and navigable rivers and lakes most abound many of them have been supplemented by railways.

Examine a map, showing the internal improvements of these States, and you will see that Long Island Sound, the Hudson River, Lakes Erie and Ontario—all highways of nature—have railways along their shores from one end to the other.

The Erie railway courses in its route along the banks of the Chinango and Junction canals for their entire length, and the Chemung Canal runs all the way by the side of its railway; so does the Oswego Canal. Indeed there is not a canal in the State, of any beyond a mere local importance, that is not supplemented for a distance, greater or less by the iron track.

In Pennsylvania the Reading railway, was built, to supplement the Schuylkill Canal. There, too, the Delaware, Lehigh and Susquehanna rivers and canals have railways also running alongside of them.

The Potomac River has the Chesapeake and Ohio Canal, with the Baltimore and Ohio Railroad to accompany it; and the James River, its canal, with its accompanying railroads.

Indeed, from Dunleith, in the far north-west corner of Illinois, there are lines of railway which, under different names, run south along with the Mississippi River itself, touching it now and then on the way, and terminating both at New Orleans and Mobile.

If such great and cheap highways as the great Northern Lakes, Long Island Sound, Hudson River and the mighty Mississippi, with their fast steamers to ply up and down, cannot, without railways to supplement them, satisfy the growing demands of trade and commerce, how much more must canals need the supplemental aid of the iron track?

The Isthmus of Suez has both its railway and canal. The great American Isthmus has already the one, but the country is now clamoring for the other also.

The great overland routes of commerce require, as is thus seen, both modes of transportation; and the time is fast approaching when these grand Virginia thoroughfares between the heart of the country and the sea, will be second only to the Isthmian routes.

Therefore while the James River Canal is in process of enlargement and completion, the interests, national, State and individual, require the construction of another track—a freight track to pass produce and merchandise between the present terminus of the James River Canal and the head of navigation on the Kanawha River.

The Alleghany Mountains forbid a canal from the Delaware Bay, or from any point north of Virginia to the Mississippi Valley, and because of this, Pennsylvania constructed a railway which had to lift over these mountains its traffic with the West, by means of stationery power and ten inclined planes.

In 1854, the Pennsylvania Railway Company first established connecting links between opposite sides of the mountains so as to avoid those lifts, and in that year the gross receipts of this company amounted to \$3,512,295. They have continued to swell, and in 1867, they reached \$16,583,000, on an original outlay for the road of \$29,115,018.90.*

* See Twenty-First Annual Report of Pennsylvania Railroad Company, February 18th, 1868.

The Company is now advocating a third track, to take the place of a canal, and to serve as a heavy freight line, with cars and engines to travel at the rate of not more than six miles an hour. These cheap and slow freight trains are to be provided with mess and sleeping arrangements and with hands sufficient to run them day and night *a la* canal boat. Such a road is required across the mountains of Virginia while the canal is being dug.

The Merchants of the Seaboard on Cheaper and Better Outlets from the West.

Last February the commercial men of the country met in council at Boston to consider, among other things, and first of all, the enlargement and improvement of new and existing lines of inland transportation, including rivers and canals.

Among its preambles it was held that: "Domestic products constitute the basis of nine-tenths of the internal trade of the country and furnish the means of sustaining its foreign commerce, thus rendering an extensive, varied and active domestic industry essential to its proper commercial development."

And among its resolutions it was declared: "That this convention regards the facilities of transportation between the seaboard, the Mississippi and the Pacific as indispensable to the highest development of the country and the surest bond of perpetual union.

"That this convention earnestly recommend to the Congress of the United States, as incident to its plenary power, to regulate commerce with foreign nations and among the States, to co-operate with either or all of the governments of the States interested in measures which will make certain the opening of a ship canal adequate to pass vessels of one thousand tons burden from the Atlantic coast by the channel of the Great Lakes to the Mississippi River."

These were Northern men. The channel of the Great Lakes would, it cannot be too often repeated, be impracticable in a war with England. It is annually closed by ice for five months, and, in taking the line of the St. Lawrence, its approaches by sea would be hindered by fogs and iceburgs in the summer of every year.

The Virginia Routes Overlooked.

The only canal that can answer the purposes of the call, must lie *wholly within* our own borders. The only channel it can take is such as the physical geography of the country will allow. The only channel that it should take is such, that winter climates will not seriously obstruct. With one terminous in the heart of the Mississippi valley and the other midway the Atlantic sea-coast, it should afford, between the best harbor on that coast and the eastern terminous of the Pacific Railway, the cheapest line in peace and the safest in war that can be had. It should be central in situation, so as to afford the greatest amount of convenience to the greatest number of States, to the nation and people. Such are the requirements.

The physical geography and climates of Virginia admit of a route which, better than any other, satisfies these requirements and completely fulfills these conditions.

The former admit and the latter call for two great national routes, each consisting, one temporarily, the other permanently, perhaps, of a rail and a water line between the tide-water harbors of Virginia and the navigable tributaries of the Mississippi and Alabama rivers.

Each of these routes is partly completed, one leading from tide-water to the South-west, and which it is proposed now to extend down the Holston into the Tennessee, and down this stream to the Ohio river, with a branch at Gunter's Landing through the Coosa Canal and the Alabama River to the Gulf of Mexico.

The other route leads to the North-west, and consists of the James River and Kanawha Canal as its water line and the Chesapeake and Ohio Railroad as its iron way. The latter route has been fully described, the former has been merely alluded to.

The Coosa and the Tennessee route call for the completion forthwith of improvements required to give uninterrupted steamboat navigation from the Gulf of Mexico through the Alabama and the Coosa into the Tennessee, and thence into Virginia.

A company has been incorporated for improving the navigation of the Coosa river, so as to open it for steamboats from Rome, in

Georgia, via the Alabama river to Mobile. A canal has also been proposed, to pass steamboats from the Coosa over into the Tennessee at Gunter's Landing. These two rivers approach each other within 25 miles. I am not aware that any surveys have been made for a canal across this isthmus. But be its topography never so difficult, the work is *a national necessity*, and therefore sooner or later must be built. The practicability of all the other parts and links in these two routes, has been determined by actual examination and survey.

A corps of United States engineers is, at the national expense, now improving the navigation of the Tennessee river for steamers of 750 tons, from its mouth to Chattanooga.

The extension of these improvements thence to Saltville, in Virginia; the construction thence of a double track freighting-railway to the James River Canal at Lynchburg, are the improvements called for in this direction. They are required to furnish the majority of the people in the Gulf States with a cheaper and shorter route in peace than any they now have to the Atlantic seaboard, and with a safe one in war.

These links being complete they will form a composite line of railway, river and canal of 874 miles* between Hampton Roads and the great Southern bend of the Tennessee river at Gunter's Landing, in Alabama.

The Virginia and Tennessee Railroad, with connections extending to the Gulf of Mexico, to the Mississippi river, to the Cumberland and Ohio lies along this route, and though but a single track, it is already competing with other routes for the transportation of cotton from points as far distant as Memphis and Selma, delivering it in Norfolk as cheaply as by existing routes it is carried to New York.

The North-western route via the Kanawha and Ohio also calls for the immediate construction of a temporary double track freight-

* DISTANCES BY WATER.

From Memphis to mouth Tennessee.....	300	}	700
Mouth Tennessee to Gunter's Landing.....	400		
Memphis to Hampton Roads.....			1,574
Memphis via Ohio and Kanawha.....			1,603

ing-railroad from the head of navigation, on the Kanawha side, to the present terminous of the James River Canal, on this side of the Alleghany Mountains, at Covington, (for it is nearly completed up to that point). This improvement is required as a temporary work, to accommodate the traffic between the North-western States and their seaport in Virginia, until this water line and the Chesapeake and Ohio Railroad be completed.

The James River and Kanawha Canal, and the Chesapeake and Ohio Railway have been already commenced and carried, the former 196 and the latter 204 miles, to the eastern slopes of the Alleghany Mountains.

They are the complements of each other and must be regarded as parts of the same system.

The early completion of these two works is required, not only as a continuation of the Pacific Railway to its natural terminous in Virginia, but it is required to enable the United States to gain their lost ground in the commercial race and to place in the hands of the farmers of the West the means of satisfying more conveniently the heavy demands which the tax-gatherer is now making upon them. Both of these routes are required to do the fetching and carrying for the Great West.

THE WORK NOW IN PROGRESS ALONG THESE TWO ROUTES.

The Virginia Central Railroad Company has now merged itself into the Chesapeake and Ohio Railroad Company, and has undertaken to extend this road by a single track to the Ohio, 224 miles beyond Covington. A single track will not satisfy the way-business that Virginia herself requires of it. After conveying to market the agricultural produce to be annually gathered on the wayside, it will not be able to furnish transportation more than sufficient for the coal and salt and minerals of the Kanawha valley, much less will it be able to fulfil the conditions of a great thoroughfare between the commercial cities of the West and their natural and nearest seaport.

To do this the canal must have at least the capacity of the Erie enlargement, so that the barges that are loaded at the Eastern terminus of the Pacific Railway on the Missouri, and at the various

landings on that river and its tributaries, on the Upper Mississippi, the Ohio and other Western rivers may be passed through the canal as regular canal boats; and so without breaking bulk by the way, deliver their cargoes at the wharves or on board ship in the docks of Tide-Water Virginia. The topographical features of Virginia are such as to admit of all this.

The canal, if undertaken at once, will require several years for its completion, but the railroad for freights may be pushed forward immediately. The route has already been surveyed and the line located.

That these works be brought to speedy completion is a matter that touches the interests of every man in the valley of the Ohio, or the Missouri, or the Upper Mississippi, who has a dollar's worth of produce to sell; a pound of groceries, a yard of calico, or an ounce of medicine to buy.

THE SOUTH-WESTERN LINE.

It, in like manner, consists of a composite route of rail and water.

There is a continuous line of railway (single track) extending along this route, under various names, from Norfolk, Petersburg, Richmond, West Point, Fredericksburg, Alexandria, Washington and Lynchburg to Bristol, in Tennessee. It continues thence via Knoxville and Chattanooga to Memphis with numerous connections right and left by the way.

On this side of the mountains the water line along the route from Hampton Roads via the James River Canal to Lynchburg, is complete for 272 miles.

On the other side of the mountains, engineers are at work, as before stated, improving the Tennessee river from its mouth to Chattanooga, a distance of 538 miles. The estimated cost of these improvements is \$4,050,940.95.*

* See Report on Examinations and Surveys of the Tennessee River made to General Weitzel, United States Engineer Corps, by William B. Graw, Chief Assistant Engineer.

What is thought of this route and the navigability of the Tennessee and its tributaries by the Engineer Bureau of the Army.

The attention of the Government has been directed to the improvement of this river, from time to time during the last 40 years.

In 1832 Congress voted the State of Alabama 400,000 acres of public lands to improve the navigation of the Tennessee with a canal round the Muscle Shoals.

These lands proved insufficient, and we learn through the official reports of surveyors to the Engineer Bureau in Washington that these Shoals remain now as they were then—passable by steamers for only “three or four weeks in the year,” and then exceedingly dangerous,* and this, notwithstanding, that for 300 miles thence up to Knoxville there is water enough during 9 months annually for steamers drawing 3 feet.

“From Brown’s ferry,” say these Reports, “a majestic river, broad, deep and with gentle current at all times, is seen stretching for 100 miles above, through a valley abounding in the latent elements of prosperity; a river which, in this distance, is seldom seen to bear on its bosom a *pellicle of ice*, and a country whose climate is so genial that wheat is ripe for harvest by the time the green blades in the North-western States emerge from the snow.

“Yet, with this favorable combination of natural resources, the Valley languishes for want of a cheap transportation to market; and this portion of the river, for purposes of constant and certain navigation, is as sealed as though the river had no outlet to the Mississippi valley.”

Indeed steamers of that draft can go for 6 months during the year as high up as Kingsport or the Boat-yard on the Holston, and this river is so gentle in its descents, so free of dangerous rapids, that the people of East Tennessee were formerly supplied with salt, brought down in flat boats from the salt works of Abingdon, Virginia.

* Page 26 Graw’s Survey, see Ex. Doc. No. 271, Letter from the Secretary of War, transmitting Report of Surveys on the Tennessee River, made in compliance with the act of March 2, 1867.

Nor is this all, for during "six months in the year," adds this Report, "boats of two feet draft can ascend above Knoxville 100 miles up the Little Tennessee; 153 up the Clinch; 75 miles up the Hiawassee; 125 miles up the French Broad, and 50 miles up Powel's river."

In short, the engineer adds: "there are 925 miles of natural navigation above the Muscle Shoals, with only three weeks precarious outlet at Muscle Shoals to the Lower Tennessee and Mississippi valley, from a region of whose drainage into the Tennessee embraces 15,000 square miles."

The navigation of these six tributaries, can, he says, be easily improved still higher up from the above named points, viz: that of the Holston, to the Virginia Salt Works; that of the Clinch, 50 miles; that of the Hiawassee, 100 miles; that of the French Broad, 100 miles, or as far as Ashville, North Carolina, and that of Powel's river, 50 miles; making a total length of inland navigation above the Muscle Shoals of 1,300 miles.*

In the regions thus watered and drained, and shut up from the great commercial highways of the country, this Report and the Survey of the Tennessee river goes on to say that there "wheat matures six weeks earlier than in the Northwestern States, and brings the highest price in the New York market. While the Northwestern farmer has a rigorous winter to contend with which compels him to house and feed his stock for six months in the year, stock can graze all winter in North Alabama, thus saving the farmer the labor of providing for it. The North-western farmer, moreover, has only six months in the year in which the weather will permit him to provide for his wants in the winter; while there is hardly a day in the year when the North Alabama farmer cannot till his grounds.

"These advantages of this section of the country over the Northwest must have their weight; and when it is more generally known that the climate invites the farmer here, which permits the Malaga grape, the fig, and pomegranate to flourish in the open air in the vicinity of Chattanooga and Huntsville—a climate which has neither the rigorous winters of the North, nor the feverish

* Page 27 Report of Gaw's Survey, 1867.

summers of the extreme South—immigration must be turned to the Tennessee valley. Its mild, uniform climate, fertile soil, pure air, and abundant water, its educational and social advantages, and a liberal policy to be pursued by large landholders, are points not to be disregarded by those seeking homes.

“The mineral wealth of the tributaries of the Tennessee river is no less than the agricultural resources of its valley. This region is fast becoming known to the people of the country as one of the richest sections in mineral deposits in the United States; whilst its merits as an agricultural and stock-growing country are illustrated by the fact that from it both armies subsisted for nearly two years during the late war.

“The coal deposits of Hamilton and Roan counties, Tennessee, are enormous, and the coal is of excellent quality; but that produced from the mines of Anderson county has been developed only recently, and is transported by rail to Memphis, Atlanta, Augusta, Macon, and other cities of the South, where it is pronounced equal to the best Pittsburg coal for all purposes.

“The opening of the river would develop the coal trade to an immense extent, by enabling it to be furnished to distant points at half its present price, and with it would stimulate the manufacture and exportation of iron, zinc, and copper, of which vast quantities are found in this section of the State.

“According to the census of 1860, the amount of coal mined in Tennessee was 3,474,100 tons, fully three-fourths of which were from the upper Tennessee at Florence, Alabama; this trade would, in the course of time, receive another feeder from the mountains of Alabama, 30 miles from the river, where the coal is of a superior quality.

“With the opening of the Tennessee river at Muscle Shoals, Emory river coal could be delivered at Decatur for 24 cents per bushel; at Paducah, for 27 cents; without any interruption from the ice to the trade.

“Wheat could be transported to New Orleans for 20 cents per bushel and thence to New York, making 32 cents from the Ten-

nessee valley to New York,* whilst freight from Dubuque, Iowa, by rail to New York is 68 cents, which the Western farmers are compelled now to pay.

“If eventually there should be a connection between the Tennessee and Coosa rivers by canal, grain could be transported from the valley to Mobile for 12 cents per bushel, reducing the distance of water carriage 800 miles, and the freight to New York to 24 cents.”

Gaw's report is made to General Heitzel, who is in charge of the Tennessee improvements, and in his communication forwarding it to the proper Bureau in Washington for transmission to Congress, the General endorses his subordinate and says:

“In addition to the many good reasons given in Gaw's report, for making the improvement at this time, and to those which have been given by the many able men who have reported on this subject during the last 40 years, there occurs to me, that not only would a work be done which should have been done years ago, but which would have repaid the government a large interest, but that it would be the means of giving a poverty-stricken community an opportunity to recover from the disastrous effects of a war, and give employment to a large class of deserving people who are said to be out of employment.

“I am perfectly confident that if the distinguished soldiers who commanded our armies operating along the line of this river during the late war, would be called upon to testify in this matter, that it would be found that enough money would have been saved to the quartermaster department by an improved river, in one campaign, to have trebly paid the expenses of doing the work.”

There is bearing upon the subject in hand, other information contained in this interesting Report which may be found in Ex. Doc. No. 271, 40th Congress, second session, April 3, 1868.

“Besides the above facts, appertaining strictly to the Tennessee

* By opening the proposed route through Virginia, it could be delivered on board ship at Hampton Roads at 20 cents.

river and its valley, there are others continental in their character, and deserve some consideration in connection with this general description of the Tennessee river.

“In examining on the map the anomalous course of the Tennessee river, it is observed to approach very closely to the rivers of the Gulf slope.

“At Guntersville the distance between the Tennessee and Coosa rivers at Gadsden is only 45 miles.” (The distance by a straight line from Gunter’s landing to Gadsden is not more than 25 miles, though the navigable waters of the Coosa and Tennessee approach still more closely.)

“As the obstructions of the islands below Gadsden, on the Coosa, will be surmounted in time, it becomes an interesting question as to whether a water connection by canal can be made between the Tennessee and Coosa rivers at Guntersville and Gadsden, thus making a direct water communication from the Tennessee valley to the Gulf.

“The topography of this part of the country indicates the feasibility of this work, and from the records of the Gadsden and Guntersville railway survey (32 miles in length) sufficient data might be obtained to determine the magnitude of the undertaking, but the commercial advantages that would attend the construction of this work are so great as to demand an examination of the country with this special view.

“Another locality inviting attention is that between Ashville, North Carolina, mentioned as the head of future slack-water navigation on the French, Broad and Catawba rivers in North Carolina, emptying into the Atlantic Ocean. This distance is about 40 miles. No opinion can yet be advanced as to the practicability of this enterprise, but it is entitled to notice in this bird’s eye view of the Tennessee valley.

“It is by such a broad and comprehensive view of the subject that is obtained a proper estimate of the interests involved in the removal of the difficulties to navigation as Muscle Shoals.

“These interests are not confined to the Tennessee valley, but may in time be made to affect the Gulf and Atlantic coasts, for

the impetus which would be given to commerce and trade in the Tennessee valley by this improvement would demand the slack-water improvement of its tributaries pointed out, and then, in time, as the country became fully developed, would lead to the consummation of a direct connection by water of the Tennessee valley and the waters of the Atlantic and Gulf.

“Such are the immediate and distant results, which must attend the removal of the obstructions at Muscle Shoals. But as it is, the Tennessee river for purposes of commerce is a great national artery severed at Muscle Shoals. To restore a healthy circulation to trade and vitality to a great section of the United States, wasting away under influences that can be counteracted only by bringing it in contact with the moving commercial world, is within the easy accomplishment of the engineer, and needs only a careful study of the Tennessee river and the vast hydrographic system of which it is the trunk, to perceive the insignificance of the time and means required for this work, when compared to the gigantic results to be achieved.”—*Pages 27–8 Graw’s Report.*

As a great national work, both commercial, political and defensive in its aspects, this fact seems not to have made a lodgment in the public mind, viz: that if this great South-western route were completed on the scale and in the manner now suggested there would meet at Gunter’s Landing two inland and national water lines, as useful in peace as in war—one from the Gulf of Mexico, via the Alabama and Coosa rivers, through a steamboat canal of not over 30 miles long, to the Tennessee.

The other through all the western tributaries of the Mississippi, above and below the mouth of the Ohio, thence up the Tennessee to the junction of the Coosa Canal and so up the Tennessee to the Holston at Saltville, and thence by rail and water through Virginia to Hampton Roads.

This national highway, as well as its fellow, via the Kanawha to the Chesapeake, being completed, the farmers in the Mississippi valley, whose market towns are situated on either bank of that river anywhere between New Orleans and St. Paul, or on any of its western tributaries between the head of navigation on Red river and Fort Pierre, 1,500 miles above St. Louis, on the Missouri,

would have a choice of routes for sending their produce to the seaboard; one of which "would be open at all times and ever without a 'pellicle of ice,' to intercept navigation."

Until these ways into and through Virginia are completed and thrown open as great national highways to the sea, the farmers throughout the Trans-Mississippi country north of Arkansas must continue to pay from one-half to three-fourths the value of their crop to get it to market. Indeed the exactions for freight and tolls and insurance are now so heavy by present routes, both Lake and Gulf, that farmers in many parts of that country are not able to send their produce to the seaboard markets at all.

These two Virginia routes would, for all that vast region of country, open a cheaper way to the markets of the Atlantic seaboard than any they have now, and immediately save to its inhabitants in transportation alone, a sum as great as their taxes.

The importance of these routes to the farmers of the Mississippi valley will appear at once to any one who will take the trouble to study the effects of railroads upon agricultural industry.

At the cost of 3 cents per ton per mile for transportation a bushel of corn, worth 50 cents, will absorb itself in freight by being conveyed 593 miles on a railroad. Consequently, when corn is selling at 50 cents the bushel in New York, none can come by rail from Ohio or any of the States west.

The United States are now paying 39.4* cents per ton per mile for Trans-Mississippi wagon transportation, which is at the rate of 50 cents the bushel for 45 miles.

The same charge of 50 cents will carry it coastwise 4,719 miles, and by river 4,462. If the corn has to be hauled 100 miles over Western roads by wagon to the place of embarkation, its value is consumed by the land transportation alone.†

From St. Louis via New Orleans and the Florida Pass to New York the distance by water is 2,970 miles, and the *estimated* freight, exclusive of transshipment, wharfage, commissions and insurance,

* H. V. Poor.

† Quartermaster General.

is 38 cents the bushel. The *actual* cost by that route from Dubuque, Iowa, is 68 cents the bushel.

Thus many farmers of Ohio and the States west are cut off from the corn markets of New York and the world by the prices of railway transportation, while those of Missouri, Iowa, Kansas and Nebraska and all the country above the mouth of the Ohio, situated more than 15 or 20 miles from navigable waters are in like measure cut off by way of the Gulf.

To these inland States the Government has, it is estimated, during the last eighteen years, granted 42,071,387 acres of land for the construction of railroads. This in the aggregate comprises an area greater than that contained in all the New England States. Those grants were made chiefly from the lands of the North-west territory given to Congress by Virginia.

The population of the inland States in 1867, thus cut off from the markets of the seaboard, was 14,660,000 souls, and the length of their railways 17,622 miles.*

According to the same authority the aggregate length of all the railways in the whole country is 39,244 miles. The tonnage moved by them last year was 48,488,000,† exclusive of coal, with an average value of \$150 the ton.‡

Using these figures as data, calculation gives 21,728,000 as the number of tons of merchandise moved last year over these Western roads, and \$3,259,000,000 as its value.

According to the same authority this value is increasing in something like a geometrical progression upon a present ratio of \$300,000,000 a year.

Three thousand two hundred millions of dollars is equal to the national debt.

Let us inquire how much of this produce enters into the list of domestic exports of the country.

* Henry V. Poor.

† Manual of the Railroads of the United States, 1868-9, p. 28.

‡ Poor's estimate. I think it is too high, but as it is Northern and *quasi* official, it is used for the following estimates.

The data for answering this inquiry accurately are wanting; but not to err in favor of the cause we plead, let it be assumed that all the grain, flour, breadstuffs and provisions that were sent abroad last year came exclusively from these pent-up* States: that none of the States of the Atlantic seaboard, nor of the Gulf, contributed to these exports a bushel of corn, a barrel of flour or a pound of wheat.

Upon these assumptions, the total quantity that found its way abroad, out of three thousand and odd millions was \$50,000,000†—not quite two per cent.

What would the farmers of Pennsylvania, New York and the New England States think, and what would be their condition if they could get to the sea with only two per cent. of their domestic products?

With this great source of commercial wealth and national prosperity thus cut off from the sea, with its present avenues closed entirely for five months every year, and crowded to their utmost capacity during the other seven; it is no matter of surprise that while France and England have during the last seven years increased their domestic exports—the former at the rate of \$32,000,000, the latter at the rate of \$35,000,000 annually—the United States have increased hers simply—nil.

Both of these routes are already required to accommodate the trade of the Mississippi valley and to satisfy the reasonable demands of the people there; and when they are opened, whichever of the two a farmer may adopt, the way will be the same from all the Western tributaries of the Mississippi as far as Paducha, in Kentucky, at the mouth of the Tennessee.

Here there is a fork, one branch leading up the Ohio to the Kanawha, the other up the Tennessee and Holston to Saltville.

The distance to Hampton Roads from this fork is—up the Ohio, according to Appleton, and up the Tennessee, according to the

*“Pent-up,” the fourteen inland States north of Alabama, Mississippi and Louisiana, which are shut out from the sea.

† Annual Report of Bureau of Statistics, Commerce and Navigation of the United States, 1867, page 37. In this sum is the following items: “Provisions including fish, potatoes and other vegetables, \$19,000,000.”

United States engineers—nearly the same; but as one is to be a continuous water line, and the other to have a portage of 176 miles by rail, the water line will be the cheaper, as the following statement will show*:

Comparative Statement as to Freights and Distances from the Mouth of the Ohio River to Hampton Roads and to New York.

	Miles.	Dolls	Cents.
TO HAMPTON ROADS,			
Via James River and Kanawha Canal.....	1,353	6	86
Via Tennessee River.....	1,333	8	84
TO NEW YORK,			
Via Illinois River, Chicago and Lakes.....	2,119	12	56
Via Gulf of Mexico.....	2,750	13	78

This charge of \$13.78 is exclusive of insurance via the Florida Pass, which, during the stormy season from 15th of July to 15th of March, amounts to 2 or 2½ per cent. upon the value of the cargo.

The mouth of the Ohio is nearly half-way between New Orleans and the Falls of St. Anthony. It may, therefore, in this view, be taken as the commercial as well as the geographical centre of the Mississippi valley.

Though the James River Canal is closed by ice on an average of only fifteen days annually, yet from 1848 to 1868 there were five winters, in each of which it was closed over a month, the longest period being 56 days. †

An occasional suspension of 56 days in the transportation of the produce of the West and North-west is a delay which the business of the country cannot tolerate.

The preceding comparative statements as to dollars and distances by existing routes show that by adopting these two routes through Virginia the people of the Mississippi valley will save in transpor-

* Throughout this Report the distance, when no better source of information was accessible, have been taken from Appleton's Railway Guide.

The authority of the United States Engineer Corps has invariably been preferred, when there was a choice.

† Statistics of James River Canal.

tation from \$4 to \$5 on every ton of produce, and from 700 to 800 miles of navigation upon what the Lake route, and from 800 to 1,400 miles, and from \$5 to \$7 the ton upon what the Gulf route now costs them.

There is at present natural navigability from Mobile up the Alabama river to Wetumka, on the Coosa; here the ledge which crops out to form the Muscle Shoals of the Tennessee interrupts navigation and forms a portage of 18 miles; after which the river again becomes navigable, and steamers ply on it regularly thence to Rome, Georgia. A canal over from the Coosa to the Tennessee would open an inland communication between the Chesapeake Bay and the Gulf of Mexico, that would be of the utmost importance in war.

It would be from Montgomery and Mobile almost as direct as an air line, with only 176 miles of railway, and that a national double track for the accommodation of trade in peace, the speedy transportation of supplies and munitions and troops in war.

Rather than risk the dangers of the Florida Pass, shippers in Mobile now prefer 160 miles of rail from Cedar Keys to Fernandina, in Florida, with a delay of several days and all the expense, loss and inconvenience involved in two transshipments—one from ship to rail—the other from rail to ship.

Let us inquire what is the distance saved by this route *across*, instead of *around*, this peninsula? Only 336 miles of sea transportation; and for that, 160 miles by rail is substituted: *e. g.*:

Mobile to New York by sea.....	1,628 miles.
Mobile to Cedar Keys by sea.....	291
Cedar Keys to Fernandina by rail.....	160
Fernandina to New York.....	841*—1,292

From Mobile to New York is a sea voyage. Ordinarily the proportional expenses of 336 miles in such a voyage is covered by the cost for 40 miles of railway transportation.

But these 336 miles lead through the Florida Pass; and rather than incur the risk of that dangerous navigation, four times the equivalent of railway transportation, with the delays and expenses of two transshipments are preferred.

* Bureau of Navigation.

How would it be with the shorter and cheaper and safer inland route to the Atlantic seaboard via the Coosa through Virginia?

This route calls for a double track freight railway of 176 miles, and over which, it being national, the charges would be at least one-third less than they are over the Florida road; for a road thus constructed and employed exclusively as a freight line, with a tariff sufficient to cover expenses and no more, would be able to fetch and carry at very low rates, probably for as little as a cent the ton the mile, or even less.

As a practical illustration of this, cases in point may be mentioned—*e. g.* The *cost* per ton per mile on the Philadelphia and Reading; the Lehigh and Susquehanna and other Pennsylvania railways, with a mixed business of freight and passengers, is one and three-fifths cents, per ton per mile. These roads pay dividends.

This road being national, would not be expected to charge more for freight than merely to meet the cost of transportation, management, wear and tear, and the like. In the estimates intended to show the saving to be effected by the Virginia routes, I have constantly aimed to keep them on the safe side, so that results may prove more flattering in the end than they are made in this report to promise.

With this aim, two cents, rather than one, is assumed as the rate per ton per mile, which the western farmer would have to pay for sending his produce to the seaboard over this 176 miles of rail.

These two routes, the one to the North-west, the other to the West and South-west, being completed, the produce of the Mississippi valley would flow out to the markets of the world between the Capes of the Chesapeake, like a great commercial *vena contracta*, and such as has been rarely seen.

They would meet in Hampton Roads, and like the letter V, include all of the country north and west of a line from Mobile through Rome, (Ga.), to Norfolk on one side, and south and west of a line on the other, from Fort Pierre through Pittsburg to Norfolk. Such is the region of country that is most deeply interested in the early completion of these lines.

THE PECULIAR CLAIMS WHICH VIRGINIA ABOVE ALL THE STATES NOW HAS UPON CONGRESS FOR THE CONSTRUCTION OF THESE WORKS AT THE GENERAL EXPENSE.

In 1780, the Congress of the United States, pressed Virginia to surrender the North-western territory, now comprising the States of Ohio, Indiana, Illinois, Michigan and Wisconsin, to the General Government, reminding her how *indispensably necessary such a cession was, to establish the Federal Union on a fixed and permanent basis, and on principles acceptable to all its respective members ; how essential to the public credit and confidence ; to the support of our army ; to the vigor of our councils and the success of our measures ; to our tranquility and to our reputation abroad ; to our present safety and future prosperity ; to our very existence as a free, sovereign and independent people.*

Virginia listened to the appeal, and granted the boon on the expressed condition, (among others), *that the lands within the territory so ceded, should be considered as a common fund, for the use and benefit of all the States, (Virginia included,) and should be faithfully and bone fide disposed of for no other use or purpose whatever.**

Times have changed—Virginia has no voice—but with mute gesticulation, her sons can but point to these routes, those lands, and these statutes, and tell their children what she did.

GENERAL VIEWS.

The people of this country are building their great hive of human industry in the Mississippi valley. That is the heart of the nation, and is in fact becoming the real source and centre of its wealth, power and greatness ; it lies within our great geographical “ V ;” and for the lack of convenient access to its apex on the sea, what, let us enquire, are the routes to which those people are compelled to resort, in order to reach the great highway of nations ? For—remember, that raw produce, and the bulky articles of agriculture, (and such constitute the wealth of the Western farmers and Southern planters,) must have cheap and convenient transportation to market ; else they will rot in the barn, be wasted, or burned for fuel, as it is already and frequently done in the West.

* See Congressional Minutes, 6th September, 1780.

The natural highways of nature afford to the husbandman, in all countries, the cheapest and the best transportation for the great bulk of the fruits of his industry.

First the sea and then the river :—These being free and untaxed, the same money which must usually be paid to pass a given quantity of freight over 100 miles of railroad, will carry it from 600 to 2000 miles through a free canal, a deep river, or an open sea.

Col. Long, U. S. A., sets down the navigable length of the Mississippi and its tributaries as not less than 16,500 miles. And Poor, the Editor of the Railroad Journal, makes the length of the railways within this V 19,500 miles. To connect these 36,000 miles of rail and river transportation with the sea and give them an outlet to the ocean through the finest harbours and best ports in all the land, is one of the legitimate results which the Physical Survey of Virginia is, when properly treated, calculated to draw after it.

All the produce and merchandise that is annually floated down these rivers or transported over these rails and which cannot stand the present heavy rates thence to the Atlantic seaboard, has, through lack of convenient and proper highways to go beyond our own borders and seek an outlet through the Lakes ; or it has to venture out upon the Gulf, and risk the dangers of the sea, and stand the hazards of the Florida Pass and Bahama Banks with all their dangers.

At this moment in a time of profound peace, Southern Planters have to pay a marine insurance of \$2* and upwards on every bale of cotton that goes abroad through the Straits of Florida. Western farmers pay like rates on their breadstuffs and provisions ; and in war these rates will be more than doubled.

* “ Rates of marine insurance like freights vary according to season of the year, age and classification of vessel. I get the following from the President of the best Insurance Co. in New Orleans and submit it :

July 15 to March 15, sail to Liverpool,	-	-	. 2½ per cent.
“ “ “ “ “ steamer,	-	-	2¼ per cent.
March 15 to July 15, “	-	-	1¾ per cent.
“ “ “ “ “ sail,	-	-	2 per cent.”

Private letter dated New Orleans, 11th November, 1868.

Those routes by Lake and Gulf lie beyond our own borders. They connect the granary of the country with its capital and with the great commercial marts of the country which are situated on the Atlantic Ocean: and what great nation was ever known to allow its chief highway of commerce between its granaries, its capital and its citadels, to pass beyond its own borders, to depend for safety upon the forbearance of foreign powers, when by the expenditure of a sum quite within its means a shorter, better, cheaper and safe way may be opened entirely within its own borders?

These domestic routes lie along the diameter, and the trans-territorial routes along the circumference of a circle: *e. g.*:

From St. Louis the distance by water to New York—

Via river, canals and lakes, is..... 1,919 miles.

Via Mississippi river and sea..... 2,970 “

Ditto to Norfolk—

Via Virginia water line..... 1,553 “

From Montgomery, Alabama, to New York—

Via river, gulf and ocean..... 1,991 “

Ditto to Norfolk—

Via Coosa Canal to Tennessee river and thence to

Norfolk via Holston, cheap railway, and James

River Canal..... 1,050 “

The physical conditions are such as to close, on one hand, the lake routes several months annually, and on the other, to make perilous at all times the navigation from the Gulf to the Ocean. Moreover, when the lake routes are open there are at certain seasons of the year obstacles interposed by the weather to cheap transportation there, which cannot be removed, and, on account of which, the people who send their grain, bread stuffs, provisions and produce via Chicago to the East, pay an extra charge of 60 cents on every barrel of flour, and 20 cents on every bushel of grain that is sent forward after the middle of September until the opening of navigation in the spring.

After the middle of September, and annually about the time of the equinoctial storms, the navigation of the lakes becomes boisterous and so remains until late in November, when the frost king

sets his seal upon them and closes them up, generally till April, and sometimes till May.

With the commencement of boisterous navigation, the statistics of the Lake Boards of Trade, show that there is a rise both by lake and rail on freight on all produce going forward from Chicago to Buffalo, New York and Boston; that this equinoctial rise is from 50 to 90 per cent. upon all grain, breadstuffs and provisions seeking transportation at that season; and that these high rates last until the opening of navigation in the spring.

According to its tariff of railroad freights published by the Chicago Board of Trade, the freight to New York was, on flour, in—

	1866.	1867.
April and May.....	\$1.10 to \$1.40 per bbl.	\$1.00 to \$1.10
October and February.....	1.60 to 2.10	1.70
Fourth class articles April and May....	.55 to .70	.50 to .55
October to February.....	.70 to 1.05	.85

LAKE AND RAIL FREIGHTS—*Flour.*

	1866.	1867.
May.....	.75 to .80 per bbl.	.65 to 70
Middle of September to November.....	\$1.10 to \$1.90	\$1.30 to \$1.35

Provisions per 100 pounds.

	1866.	1867.
May.....	.40 to .45	.32½ to .38
Middle of September to November.....	.75 to .95	.62½ to .67½

Thus it appears that in fall, winter and early spring—the very time the crops are coming forward and when the farmers stand most in need of cheap transportation—then, that is the time when the lake route is of the least value. At this season—whether they use lake or rail, or whether the lakes be blocked with ice or vexed by storms, they have to pay from 50 cents to \$1 more on every barrel of flour; and from \$3 to \$3.50 more on every 1,000 pounds of provisions that they send to the seaboard than they do in mid-summer, when their water line is clear.

During the 2½ months of autumnal storms on the lakes those farmers have also to pay more than they do when the lakes are unvexed, by 50 per cent., exclusive of insurance. This annual period of high freight commences in September and ends in April.

In Autumn, the bulk of the crop is gathered; then, and in winter, is the time for sending it to market. But this is the time

of all others when wind and weather conspire to make transportation by Lake and northern rail most expensive. As an example: The reports of the Chicago Board of Trade, show that of 54,734,212 bushels of corn that went forward from Chicago in the year 1866, '67—51,398,027 bushels, or 94 per cent., went by the Lakes; and of those, 78 per cent., or 40,355,052 bushels had to lie on the farmer's hands during the fall and early spring and wait for the smooth water and cheap lake transportation from May to September. Let those who can compute the loss, expense and inconvenience on account of storage, interest, wastage, etc., annually incurred upon all this produce.

In the twelve years from 1852 to 1863, the Illinois and Michigan Canal, froze annually on the 29th of November, and opened on the 26th March—average period 118 days. The earliest freezing during the interval being the 21st October, and the latest opening the 1st of May.

How is it with the Virginia route? On the average, for twenty years, the James River Canal was closed annually by ice, only 15 days. During this interval, there were 10 years in which it was not closed at all.* The longest period in any one year, was 56 days. The Erie Canal is closed regularly for five months. Last year it was closed unexpectedly early. A vast amount of produce was then caught in it, and the loss was heavy, so that now, as I am informed by one of the large produce houses in New York, the New York "bankers and receiving merchants were so badly caught with large amounts advanced last year and frozen in, that they have resolved to make no advances on shipments leaving Buffalo after the 5th of November; some after the first."

To leave Buffalo by the 1st November, the western farmer must have his grain in Chicago, not later than 20th of October. So here is another drawback to that route almost as bad as the frost.

The water line through Virginia will be subject to no such drawbacks, while it offers to the Western farmer other great climatic advantages in the simple fact that rivers and canals are sheltered, and navigation by them is free from the storms and quicksands

* Lorraine—Engineer, James River Canal.

that vex it by sea and lake, therefore insurance as well as freights will rule low by the Virginia route.

Our neighbors in Canada perceiving how inadequate for the West, are the New York routes by rail, lake and canal to the sea, have, at great labor and expense, constructed ship canals around the difficult passes, with the view of diverting the Western trade from Sandy Hook, and bringing it out to sea through the St. Lawrence river and gulf. These canals are five in number, and admit a draft, some of nine and some of ten feet. But they do not pay; they do not get the trade—and the engineers are now preparing estimates for extending and enlarging them so as to pass ships drawing 15 feet.

“There is,” say these gentlemen, “only one line of policy to be adopted with regard to the canals. Our course of action is suggested by the magnitude of the trade of the Western States, which if turned into its natural outlet, the St. Lawrence, would lead to the important results all yearn to effect. We can gain this trade if we improve the St. Lawrence and deepen the canals to fifteen feet, and construct a chain of locks 250 feet by 45 feet wide. Here is the policy for us to pursue—if we fail to follow it, we neglect every advantage, geographical and commercial, which we possess.”*

* * * * *

So that here are a foreign people proposing to go to the expense of canals *fifteen feet* deep to get this trade merely to pass through their borders, whereas with canals 6 feet deep and a short link of iron, it is all our own.

One of these writers (Mr. Kingsford) sets forth in a strong light the imperative necessity of other and better commercial routes, than any which now exist from the West to the sea.

He depicts in vivid colors the value and importance of our Western trade, and a few extracts from his “Canadian Canals” are here introduced, partly for the purpose of showing the absolute necessity that there is for other and cheaper and better outlets than present routes afford, and partly for the purpose of disabusing the mind of the Western people and explaining how, from insu-

perable obstacles placed by nature in the way, man never can convert the St. Lawrence into such a highway to the sea as their section of the country requires.

“There is,” says he, “no comparison between the two water routes from the lakes to the seaboard, one by the Erie Canal to New York, the other by the St. Lawrence canals to Montreal. The advantage is entirely on the side of the St. Lawrence in every respect. The cost of transport, generally speaking, is about one-half. There is a difference of ten days’ time in its favor, and it is estimated that the slowest means of transportation, and the least cost, is as rapid as the best on the Erie Canal. The St. Lawrence vessels are of much greater capacity, and in every point of view the superiority is maintained. One would consider that with all these advantages, the St. Lawrence would command not only the trade of Western Canada, but also the commerce of the upper American lakes. On looking at the geography of this portion of the continent, the natural outlet for the whole territory certainly appears to be by the river, and it would be inferred that no other would be followed; that by it, supplies would be received and exports transmitted, and that all effort to turn the commerce of the West from the river would be impossible. But the St. Lawrence is not followed; and the vessels which bear the cargoes of cereals, deposit them at the American lake-ports, for transfer to smaller craft, which descend the Erie Canal. * * * * The commerce of the North-west is not any fanciful speculation, nor is its magnitude in any way questionable. It is a reality, as inquiry will establish. It has *outgrown the Erie Canal*, and the complaint of the West is that the quantity carried is so immense, that carriers can command their own terms. The condition of the producers of the West has been described, without exaggeration, as that of men shut out from the markets of the world, oppressed by the excessive production of their own toil, which remains wasting and worthless upon their hands, depriving labor of half its reward, discouraging industry, and paralyzing enterprise. Yet the prosperity of the West dates from the construction of the Erie Canal. Indeed the existence of these States may be traced to it, for no one of them can refer to more than forty years of settlement. It is the commerce of this region, within that period which more than any other influence has raised New York to its present wealth. The form in which the

contribution has been made, is what can generally be observed between the seaport and its dependencies. The imports for the West are delivered at New York. It is there that bulk is broken, and the magazine of supply established. All cereals are delivered there, for transfer to the East, or for shipment by the ocean; a tax is levied on every bushel of grain. Accordingly, every interest has received a stimulus, and a large city has grown up to be, at the same time the London, and the Paris of this continent. The feeling, however, is strong, that this profit has been derived at the expense of the West, and there is an unwillingness longer to submit to the exaction.

“There is only one mode by which these aspirations can be satisfied—by the creation of enlarged channels of communication. In many localities the produce is even without value, for it is without a market. It is estimated that five hundred million bushels of Indian corn or maize are raised in the North-west; but not five per cent. of this amount finds its way to the seaboard, owing to the expense of getting it there; and that out of the *sixty cents* paid in New England for a bushel of corn, only *nine cents* goes to the producer; the remainder being expended in freights and commission. It is this sense of inferiority of position which has hitherto led to great discontent in the West. * * * * We can, therefore, readily understand why in the North-west public attention has been turned to the Mississippi. There is a desire to improve the Illinois river and to enlarge the Illinois and Michigan Canal to a navigation of locks 330 feet long, 75 feet wide and 7 feet deep, so that a more ample outlet may be obtained; and by turning to the Mississippi prevent the trade passing by the St. Lawrence and accordingly retain it in the hands of the United States. Nevertheless, the increase of accommodation is peremptorily insisted upon. It has been argued that it is a national duty of the central government to extend it; that in reality the national exchequer could be no more than temporarily taxed; that the import duties collected on the return cargoes purchased by the proceeds of exported food, now denied a market, would not only pay the interest of the cost of works, but would eventually pay the capital itself. This surplusage of grain, accounts for the extended pork trade. The hog is indeed regarded as corn in a concentrated form. Maize is bulky and perishable, and it is found that it furnishes cheap food for

animals. The latter, when killed and preserved, are in no danger of suffering from decay. They can be shipped at convenience. Accordingly from four to five million hogs are annually slaughtered, varying from 200,000 to 250,000 tons.

“There can be no ship canal from the West, except by the St. Lawrence. The advantages which it offers cannot otherwise be obtained. To make a ship canal to New York, even by Oswego, is an impossibility, and anything but a ship canal is of secondary importance to the West. The ocean is the prerogative of no State of the Union; and the West will seek the channel which conducts its commerce with the least cost and delay. * * * * *

“The State of Illinois has officially represented the condition of the Western States with great force. In 1863 the Legislature passed a joint resolution, appointing commissioners to proceed to Canada and solicit the earnest consideration and early action upon a subject of great and rapidly growing importance, both to Canada and the West, of enlarged and cheaper outlets to tide-water by way of the lakes and rivers and new or enlarged canals of Canada.

“This important document dwells upon the growing and already vital necessity for enlarged and cheaper avenues to the Atlantic, and advocates the importance both to Great Britain and the United States, of so improving the navigation of the St. Lawrence, as to afford the commerce of both countries a cheap communication between the shipping ports on the North-western lakes and Great Britain.

“What the State of Illinois asks is a direct trade between the North-western States and Liverpool, on the plea ‘that the increasing volumn of business cannot be maintained without recourse to the natural outlet of the lakes.’ If this opportunity be vouchsafed, *and the requisite facilities be given, the surplus produce will be increased with a rapidity even beyond that of the past century.* It is estimated that from the State of Illinois alone, there has been shipped annually, for the last ten years, a surplus of food sufficient to feed ten millions of people, and at the same time, there has been a positive waste from the inability to bring the crops profitably to market.”

Here, then, is the State of Illinois speaking in behalf of the West, and advocating the improvement of the navigation of Niagara and the St. Lawrence river with ship canals, at an immense cost, for the sake of trade with Liverpool.

The fact seems to have been overlooked that not one hundredth part of the breadstuffs and provisions of the North-west ever finds its way to Liverpool; that the great markets of the North-west are not in England, but in our own country, and among the towns of the Atlantic seaboard; and that were there a strait between the Falls of Niagara and the Gulf of St. Lawrence, as wide as deep, and as free as the Straits of Gibraltar, the frosts of winter, and the fogs of summer, would make the Gulf of St. Lawrence the most inconvenient place for distributing the produce of the West to the people of the Atlantic States that could well be selected.

It would be available at best for only a little more than one-half of the year.

Instead of being midway the coast, as the Chesapeake Bay is, it is beyond our own borders; its shores are most inhospitable; they are at the extreme verge of coast navigation—an outlet through the Gulf of St. Lawrence would be of no avail to Western commerce, in time of war.

Were the Canadian canals opened, it is admitted by those who advocate them, that they would not be available for more than 180 days a year. But the physical difficulties in the way of the St. Lawrence route to Liverpool do not end with the frost or the winter.

The advocates of this route, point to the Straits of Bellisle, and tell how many hundred miles the voyage through it from Chicago to England would be shortened.

But the way to and fro via these straits leads not only through storms in winter but through fogs and calms and on a sea beset with ice at other seasons.

The North Atlantic ocean is the most tempestuous sea in the world. Cape Horn is nothing to it. The approaches to the mouth of the St. Lawrence lie through the most stormy part of this stormy ocean.

When not vexed by gales in winter, this part of it especially, is, in summer, beset by calms, fogs and icebergs.

This route is, therefore, obstructed by the physical geography of the sea, as well as of the land, and in this fact lies the secret of the failure of the Canadian canals, notwithstanding their great depth and capacity, to get the trade of the West. The people there want and must have a route to the sea that is never closed a single month by the weather, much less one that is closed regularly for six months every year, and rendered almost impassable at other times by the dangers of the sea.

Storms, fogs and drifting ice present difficulties that are insuperable. They are fatal to this route as the commercial highway for the West; so much so, that were the Canadian canals enlarged to the size of the Caledonian, their completion would, like the discovery of the North-West passage, be followed by another discovery, viz: that practically such a channel would be of but little use to Western commerce.

The climates of Virginia and the offings of the Chesapeake are strikingly in contrast with those of Canada and the St. Lawrence, and are as inviting as the merchant and mariner would have them.

There is also another advantage in the outlet through Virginia and the Chesapeake, which the war has in the most striking manner shown it to possess: the average freights, coastwise from New York, in consequence of the fear even of one or two Confederate cruisers in 1864 was 250 per cent. higher than they were in 1861, when there were no Alabamas afloat.

Now, let the harbors of the Chesapeake be made the entrepot for this Western produce:—it might in war be distributed thence coastwise by inland water lines, leading north and south through the sounds, rivers and canals, which stretch along the seaboard, and thence inland for a navigable river distance of 6,600* miles, in the aggregate, unaffected by war rates and no more liable to interruption at one time than another.

The Albemarle and Chesapeake Canal, with two links—one of $8\frac{1}{2}$ and the other of $5\frac{1}{2}$ miles in length, and with but a single lock

* United States Census.

between them, connects, by inland navigation, the waters of the Chesapeake with the sounds and rivers of North Carolina for hundreds of miles.

Moreover, the approaches from the sea to Sandy Hook and to the Chesapeake are greatly in favor of the latter. In war, light-houses would be extinguished, and all light-boats, beacons and buoys removed. The channel way to Sandy Hook is narrow and intricate, so that a vessel flying from a superior force in war, to seek protection under the forts, or shelter in the harbor, would run great risk of stranding. On the other hand, the entrance to the Chesapeake is wide, open and clear. Ships can run in there by night as well as by day, and in all weathers.

Sandy Hook is hydrographically very easy to blockade; the Chesapeake difficult. Connect the West with the latter by means of these improvements and they will give it such power, and sustain it with such resources in war, that an effective blockade there would be simply impossible.

The offings of Sandy Hook are sheltered on the north and west, forming a lee under which blockaders may find shelter from all gales coming from either of these two quarters of the horizon.

At Sandy Hook the blockaders would have to watch a ship channel way only 900 yards wide.

On the contrary, the entrance to the Chesapeake is as wide as the distance (9 miles) between the Capes of Virginia. The coast from Hatteras to Henlopen is rigid and inhospitable, offering neither shelter nor refreshment to an enemy in distress.

And as for defence, those two national highways connecting the Chesapeake with the great West would simply make that Bay a magazine of inexhaustible supplies, and such as the world never saw.

Hitherto military men have considered the Chesapeake Bay exceedingly difficult, if not incapable, of successful defence, against a maritime power.

But, then, it was without any such connections as are now proposed, and without the supplies and resources which these connections will bring.

They will bring into close contact the granary of the country, and the seat of its prosperity. They pass at the foot of mountains of the best iron and finest coal; over mines of lead and copper; among caves of saltpetre and through forests of the finest timber. Existing improvements, extending back from the Chesapeake, already pass through forests of yellow pine, and furnish naval stores, rice, hemp and tobacco in abundance. The dock-yards and magazines for receiving military supplies, materials and munitions and for fabricating them into engines and implements of war are already there. Therefore let this magnificent sheet of water be but connected with the West by means of these two improvements and furnished with those engines of defence which modern warfare has brought into play:—let the strength and resources of the West be concentrated there;—and then, the navies of the world combined may be defied.

Unless these routes be utilized, vessels laden in time of war with Western produce will have to pass the lookout vessels of foreign naval stations, and run the gauntlet of hostile fleets, cruisers and privateers, for the distance of nearly 2,000 miles by the Gulf route; and, if they attempt the Lake route in time of war with England, an enemy would be there to overlook them all the way from Lake Huron to Buffalo, and completely to block that route against all commerce from the West.

Much has been said about the importance of the Erie and other canals as works of Lake defence, when it is obvious that in a war in which Canada is to take part, the lakes as a commercial highway, will be of little value to either of the contending parties.

The advocates of a Lake route, via the St. Lawrence to the sea, both in Canada and the United States, have made defence in war a stalking horse before the people, to show off their various schemes of internal improvement upon what a distinguished engineer* terms the “military aspects;” but he correctly adds: “The arguments advanced to sustain this view are as fallacious as the complaint uttered at the Chicago convention of the defenceless condition of the Lake Erie cities. Should war ever occur between England and the United States, and Canada be made the battle ground, we

may expect that on both sides the canals would soon be rendered useless."

Study the map of Europe; look at the lines of internal improvement there from the centre all round to the sea; consult the pages of history, and you will see what importance the great powers there, attach to a good seaport; and what both people, government and nations have paid for the right to connect it by means of works of internal improvement with the back country.

The only inland water lines by which the Mississippi valley can be connected with the ocean, so as to have at all times and under all circumstances in peace and in war, a convenient and unmo-lested highway to the Atlantic sea-front, lead through Virginia. The Alleghany Mountains afford no such passess to the north-ward of us, and, until the country avails itself of these, there is no protection in war for Western commerce, and farmers there must console themselves as best they may, under the humiliating reflection, that they are cut off with their produce from commercial intercourse with the great markets of their country, from the metropolis of the nation, and from the highway of nations:—that if they go by lake or gulf, the way is not their own, but such as others may overlook, and at pleasure, dispute and endanger, if not forbid. Whereas, their rights through Virginia none can dispute, and the way is wholly their own, and as safe and secure in war as in peace.

In short, considering that the charges via New Orleans and the Florida Pass are, in a great measure, prohibitory to North-western breadstuffs, and that the Erie Canal has not the capacity to pass more of Western produce than it is now doing, and that this produce cannot stand the charges of railway transportation from its place of production to New York, Philadelphia and Baltimore, it is clear that Western farmers can contribute but little more to the exports of the country until a new way to the sea has been opened for them. Until this be granted them, the commerce of that portion of the country cannot expand proportionally with the growth of the West.

Were the inhabitants of such a vast, fertile and growing region of country ever known to be content on finding themselves thus shut out permanently from the sea?

TOLLS WHICH THE FARMERS OF THE WEST HAVE TO PAY FOR THEIR
PRESENT RIGHT OF WAY TO THE ATLANTIC SEABOARD.

The people of Ohio and the North-west have, since the Erie Canal was first opened, as it appears by the official returns to the Legislature of New York,* paid to that State, for the right of way through it to the sea, not less than fifty millions dollars. This does not include freight either by rail or canal, but *tolls* only.

Nor does it include the tolls that they have paid for the *use* of the Oswego and other canals to the same State, nor to the English for the use of their Canadian canals, nor to the lake underwriters, nor for losses in the dangerous navigation of the St. Clair flats and Lake Erie which losses are set down in the report of Gen. Wilson, U. S. A., at \$1,000,000 annually. †

Formerly, Denmark exacted tolls at the mouth of the Baltic from vessels passing that way. To get rid of these "sound dues," as they were called, the government of the United States compounded with the King of Denmark and paid him a large sum to let our vessels pass *toll* free. Cannot the nation do as much for the farmers of the West at home, as it did abroad for the merchants of the East?

Before the State of New York undertook the Erie Canal, she generously offered it with the right of way to Congress. Congress refused it then, and it is now a sybilline leaf. In like manner, Virginia offers the right of way now through her borders, and if it be refused, the Western farmers may, when its too late, discover that they too will have let escape the golden moment. If not soon undertaken at the public expense, these works have now become obviously too important and inviting much longer to escape the attention of capitalists.

How much the people of Tennessee, Alabama and other South-western States have been paying on account of the dangers of the Florida Keys and Bahama Banks, which these Virginia routes would have saved them, I have no means of ascertaining. But the losses entailed by wreck and disaster, and the sums paid for insurance on

* Annual Report on the Tolls, Trade and Tonnage of the canals of New York, 1867.

† See his report on the Survey of the Illinois River, 1867. Ex. Doc. No. 16.

account of the dangers of that Pass, do not, from first to last, fall short of \$100,000,000. Nay, it may be more: for it has already been made to appear, that notwithstanding the perfection of charts, the erection of light houses, the knowledge acquired concerning the winds and currents of the sea, &c., insurance on voyages using that Pass, still ranges as high as $2\frac{1}{2}$ per cent. upon the value of ship and cargo.

Two and a half per cent. upon the value of all the commerce that has sought a passage that way from New Orleans and Mobile since the purchase of Louisiana, surely amounts to more than \$100,000,000, and the use of these Virginia routes would have saved much if not all of it. As an evidence of the dangers of this Pass, wrecking is the chief business of Key West. There, it is a regular occupation, and there the United States have a court of admiralty established, especially for the adjudication of salvage.

THE DANGERS OF THE FLORIDA PASS.

These are what, in navigation are called *hidden dangers*. They lurk there in the shape of insidious currents, sunken rocks, reefs and shoals. There is nothing on the surface to mark their existence. The water looks open and the way all clear, but an error in the reckoning of a minute, or even less, is often fatal to the ship and cargo, if not to crew.

To sailing vessels the calms that prevail there at certain seasons increase the danger, for in them vessels are often swept imperceptibly by the currents and stranded upon the coral reefs.

Added to these are the storms and hurricanes. They, alternating with the most vexatious calms, rage from the middle of July till the middle of March. During these eight months the dangers increase and the rates of insurance go up, for the dangers to a vessel are greatly aggravated when she is overtaken by storms in this crooked and narrow passage way. Scenes, the most awfully grand and sublime that are known at sea, sometimes take place in the hurricanes and tornadoes that prevail there; in them the waters are piled up; the Gulf stream is turned back or forced over reefs into new channels with a violence that no skill can counter-vail; no ship withstand.

Among the annals of that navigation, nautical records tell of the Ledbury,* an English vessel, which was caught in one of these hurricanes. The waters of the Gulf stream were backed up and piled to an enormous height. The scene of roaring waves and furious currents beggared description. She let go her anchors, thinking she had found smooth water and a place of safety, but when the gale abated and the sea retired she found herself high and dry and her cables and anchors entangled among the tree-tops on Elliot's Key. †

So it appears that both the route by the Lakes and the route by the Gulf are sorely beset both by wind and weather at the very time of the year when the farmers most need them.

To avoid such dangers cotton is now shipped from Montgomery, 382 miles by rail, to Savannah, and thence by sea to New York, at \$7.50 per bale of 500 lbs., say, \$30 per ton of 2,000 lbs. Mobile shippers avoid these rails and shun this Pass by fetching their cotton from Montgomery by river, transshipping it and forwarding it thence to Cedar Keys by sea. Here it is transhipped again and sent 160 miles by rail to Fernandina, to undergo another transshipment, and be forwarded thence to New York by steamer, all for \$6 per bale.

But it costs one per cent., say \$1.25 a bale, additional to insure by this route, making a total charge of \$28 per ton by weight for this light and bulky article.

Notwithstanding all these transshipments, forwarders find it cheaper and better to send by this route than to encounter the dangers of the Florida Pass and the high risks that way.‡

This South-west line completed through Virginia would enable the Montgomery shipper to send his cotton by the Coosa, Tennessee and Virginia line with a saving of 700 miles in distance.

* See Physical Geography of the Sea.

† Maury's Sailing Directions.

‡ By a New York freight bill of October last, the freights thence to Liverpool are quoted on cotton as at from $\frac{1}{4}$ to 1 cent, on flour 60 cents, wheat 14 cents, heavy goods \$6.25 a \$8.75. By sailing vessels the charges were about one-sixth less. But by steamers the average freight on breadstuffs is about \$5 the ton.

Have the people of the inland States any just claim upon the Government for a FREE highway to the sea?

The question as to the right of the people of the interior to demand of their government a national and free highway to the sea—of the West to trade with the East without paying tolls—is new. At least it has not been much discussed in the West. The principle, however, as to their right to a free highway to the sea, seems to have been recognized and admitted by the Government when it purchased Louisiana, in order to control the mouth of the Mississippi; and as to a way between great sections of the country, the Government acknowledged the principle when it offered \$20,000,000 to Mexico for the right of way across the Isthmus of Tehuantepec. Had the right been acquired, the way still remained to be opened, and that too at an enormous cost. It is now in treaty for the right to construct a ship canal across the Isthmus of Darien. This, like Tehuantepec, is intended to be a work for the purposes of commerce between different parts of the country in peace, and not for defence in war. Nor have we any people by the wayside to be benefitted by either improvement. Foreigners would derive all the local benefits of that. Virginia offers without charge the free right of way between the seaboard and the interior of far more value, both in peace and in war, for commerce, the general welfare and the common defence, than any that the Isthmus affords.

It is worthy of remark that Norfolk now, with these lines into her back country not half completed, but burdened with dividend paying freights, is becoming a cotton port of no small importance.

Notwithstanding that her connections with the cotton growing country are by rail and not by water, by single and not by double track, and therefore much more expensive than they would be if the water lines connected with the Tennessee river were completed; notwithstanding all these drawbacks, that seaport town is now receiving cotton by rail from Tennessee, Northern Mississippi, Alabama, and Georgia. That cotton should come from those parts to Norfolk by rail rather than seek the water route through the Florida Pass, is significant enough as to the dangers of that navigation. The cotton delivered in Norfolk from these States, Virginia and the Carolinas, for the last three years, counts up as

follows, viz: In 1865-66 the fifty-fifth part only of the total cotton crop found its way there for export.

But in 1866-7, one-seventeenth, and in 1867-8, one-thirteenth of the whole was shipped from Norfolk.

These are the figures:

1865-6.....	38,000 bales.
1866-7.....	124,000 bales.
*1867-8.....	187,000 bales.

The States fronting on the Atlantic are also directly interested in the early completion of these lines through Virginia; for by placing Western produce on the seaboard cheaper than it can be done by any other route, they would benefit the people of all the seaport towns.

There are (pages 53-60 Report, 1866, Agricultural Department United States,) some statistics which put the necessity for these routes in a stronger light than I have ventured to do. These statistics being arranged in tables—

“Showing the Amount in Bushels, and cwt. of certain principal crops of the several States named, the Yield per Acre, the total Average, the Average Price in EACH STATE, and the Value of each Crop for 1866.”

By them it appears that in 1866 the average price of corn in the 16 Atlantic States from Maine to Georgia, was \$1.22 cents the bushel, and the average price in the 12† inland States was 65 cents.

Western corn is as good as Eastern. What, then, but the difficulties and expenses of getting to the markets on the Atlantic seaboard can make this difference?

But if we take the average price in the six great corn-growing States of the West, viz: Kentucky, Ohio, Illinois, Indiana, Iowa and Missouri, and compare it with the average price in the State of New York and the six New England States, we shall have a better idea as to the money value of these Virginia routes to

* Furnished by R. Maury, Maury Bros., New York.

† West Virginia and Minnesota are omitted in the Report.

Western farmers. The average price of corn in the latter was \$1.33, in the former \$0.48 cents the bushel.

These figures of the Agricultural Bureau in Washington bring out the startling fact to the Western farmer, that in sending corn to the sea by present routes he is required to give to New York, for tolls and to middlemen for freights and commissions, from 47 to 85 bushels out of every 100 that go forward.

Statistics are cumulative with proof as to the inefficiency of present routes to fetch and carry between these inland States and the sea. Those contained in the "Annual Report of the Bureau Statistics on Commerce and Navigation of the United States for the year ending 30th June, 1867," seem to be conclusive; *e. g.* :

"Exports of domestic products for the year ending 30th June, 1867.

"Total exports, rice, cotton, tobacco, naval stores, spirits of turpentine, &c., from the Southern States—population 9,568,709—\$328,506,737. Ditto, all the other States—population 24,937,173—\$143,201,243."

In these two aggregates are included \$50,000,000 on account of breadstuffs and "provisions, including fish and vegetables."*

Giving *all* the \$50,000,000 to these inland States, they would then export only \$3.20 to the inhabitant; while the Southern States export, in articles *exclusively their own*, upwards of \$34 to the inhabitant!

Among the causes which go to make up these two rates of \$3.20 and \$34 what one can have a greater influence than the simple geographical fact that one set of States border on the sea, and have free access to it, the others are inland and have to pay heavily to get to it? .

Each group is chiefly agricultural. The soil of the inland, is as fertile as the soil of the Gulf States, and nature is as profuse in her bounties to the inhabitants of the one as to those of the other, in all except geographical position, as it regards convenience to the markets of the world. In accounting for the great difference

* Table XXVI Bureau of Statistics, 1867.

in the values contributed for exportation I can find among the agencies concerned none more potential than the lack of cheap, convenient and free highways from the West to the sea.

The true interest of the nation in these Virginia improvements consists in them not merely as works in a wise system of political economy, but in enriching, by means of them the citizen—to the end, that the national revenues may be increased and contentment established among the people. Were the Western people furnished with these cheap and free highways to the sea, the country would have so much more produce to send abroad; and those people would consume so much more largely of foreign goods; and so the revenues on the increase of importation would in a short time reimburse the Government many fold.

Such, then, are the commercial, economical and political advantages which Virginia, by virtue of her geographical position and her hydrographical features, holds out to the people of the West and the Government as inducements for the early completion of these national highways.

AS WORKS OF DEFENCE.

Considered in this light, these new routes assume a magnitude of still more commanding proportions and direct national importance.

In case of a war in which Canada should become the seat, the farmers of the West may *well* ask the question, what would become of them. The Lakes would be impassable to vessels of commerce, and their produce, as recent experience has abundantly taught them, could not afford to pay railway freights and monopolies that combination would be sure to exact.

The public mind is already anxious upon this subject:—

Last year Gen. Wilson with a corps of United States engineers, was sent under an act of Congress to survey the Illinois river with the view to its improvement and the deepening of the Illinois and Michigan Canal.

After careful survey and examination, he recommends the improvement of the river and the enlarging of the canal to a ship canal, as a national work, and estimates the cost at \$21,339,996.

The General says impressively that he is induced to recommend "improvements of such magnitude after the fullest consideration of the subject, because he believes that nothing else will answer the present and future demands of the national defence and sufficiently provide for the immense internal commerce of the country.

"Although discussion of these improvements in their military, commercial and political aspects, even if necessary, would be out of place at this time, yet I cannot (says he) forego a passing allusion to them. The recent confederation of the British American provinces shows the anxiety felt by the English government in this behalf, and must be regarded as a movement in hostility to the people and institutions of the United States. While it does not actually increase the aggregate British strength on our northern frontier, nor in any way encroach upon our territorial rights, it consolidates the policy in regard to canals, as well as other matters, and renders available the entire force of those provinces in any difficulty which may arise between England and the United States. The English are already able, by means of a system of internal canals, to pass gunboats of nine feet draught into Lakes Erie and Ontario, and are contemplating a new canal which will enable them to reach Huron without coming in reach of American territory at any point. The canals already finished were constructed avowedly for military as well as commercial purposes, and *in case of war will enable the English to drive our commerce from the Lakes* and destroy or lay under contribution nearly every important city on our northern frontier. But in addition they can inflict upon us a still more vital injury, when they have gotten possession of the Lakes by severing the *main line of our communication with the East for heavy products*. * * * * *

"There are but two ways (he continues) in which we can thoroughly protect our frontier in times of war, and relieve ourselves of a continual menace in times of peace. The Government must either *connect the Lakes and the Mississippi river by a canal of sufficient capacity to accommodate gunboats suitable for service on the Lakes, or prepare for the annexation or conquest of Canada!* * * *

"These States [Illinois, Iowa, Wisconsin, Minnesota and Missouri] have now reached a stage in their developement, when cheap and direct communication with the markets of the world has

become an absolute commercial necessity, and unless the amplest provision is made by our own Government for such communication, and a policy adopted by Canada which shall give us all the advantages of unrestricted trade upon their rivers and canals, our commerce and agriculture will be crippled, before the expiration of a decade, to such an extent as to demand not only the enlargement of the Illinois and Michigan Canal, the improvement of the Illinois river, and the construction of the Rock River and Green Bay Canal, but the *absolute conquest or annexation of the entire Canadian Confederation!*"

Such in the eyes of the Engineer Bureau and its officers—and they are the experts of the nation—is the importance of a highway from the West to the sea, that in their judgment it must be had at all hazards, even if it be necessary to incur the costs, and risk the chances of war with all of its horrors and calamities. They overlook the geographical position of Virginia. Would it not be wiser and better, to say the least, since nature has given us better routes—and made them all our own—to open and improve them?

But suppose Canada to be seized by the hand of conquest, the ways from the West to the sea are already taxed to their utmost and the Western farmers would, with Canada conquered, occupy the position they do now; only with more widows to wail and more taxes to pay, they would be still left to look to Virginia for those advantages of geographical position and physical features which are to be found no where else, and which afford those natural facilities by which alone the people of the North-west can secure a highway to the sea that shall be the cheapest and the best in peace and the safest in war; at all times open, and amply sufficient for all their present and future demands.

But, let it be admitted for the sake of the argument on that side, that Canada is annexed; and her canals also converted at great expense, by the United States, into free ship canals;—that the frosts of winter and the iceburgs and fogs of summer, are all, by the wave of some magic wand, put out of the way. The routes to and from the Gulf of St. Lawrence are overlooked by Nova Scotia and New Foundland, as are those of the Gulf of Mexico by Cuba. And then the same plea would have to be urged for the annexation either by purchase or conquest of these foreign possessions, that

was put forth for the purchase of Florida, and which has so often been raised for the acquisition of Cuba.

Thus that route is beset by difficulties, both political and physical, which are well calculated to deter all sober minded men from the idea of war for its sake.

If we turn our eyes from the North and look to the South, we shall find, from time to time, on the part of the Government, like manifestations of solicitude for the safety of the commerce of the Mississippi valley on its way to the Atlantic Ocean in time of war.

Under the plea of taking the necessary steps for watching and protecting it, \$200,000,000 have been offered for Cuba, \$7,000,000 given for the Island of St. Thomas. Notwithstanding the fact patent to the mind of all who use the sea, that the acquisition of these strongholds would not give that perfect security which the nation requires for Western produce on its way to market in war, nor prevent Western commerce from being harrassed and worried by an enemy's lookouts, privateers and cruisers from the time it cleared the offings of the Balize till it passed the Straits of Bemini.

In order to satisfy the minds of the farmers in the West on this point, is it necessary to remind them how, a few years ago, a Confederate cruiser came into the Gulf, hunted up and sighted their blockading fleet, enticed one of its vessels off, engaged and sunk it, and then made her escape?

How many merchantmen, (considering that the distance at which vessels can be seen at sea rarely exceeds 12 miles,) might she not have captured, had the Mississippi been at that time the chief outlet for the produce of the West, and the Gulf of Mexico dotted with merchantmen bearing it off to market?

It is now as it was 20 years ago when General Jessup wrote his famous letter to the President of the James River Canal as to the importance of that work as a military necessity.*

The two naval depots of Great Britain "in our front (said he)—Halifax and Bermuda"—and he might have added the two others—Jamaica and the Bahamas—command our Atlantic (and Gulf)

* Letter, dated Washington City, 3d May, 1859, to Thomas H. Ellis, Esq., President James River and Kanawha Canal.

coasts precisely as the bastions of a fortress command its curtains : the former may control our commerce with Europe ; the latter that with the East and West Indies, South America and the Gulf. To counteract the military defences of Halifax we have already the naval stations of Kittery, (Me.,) New York and Boston. To check Bermuda we have but a *single position on our whole coast*, as before stated, which is Norfolk. It is *a matter of surprise* to the intelligent military reader that a position possessing so many strategic advantages should have been so long neglected. In regard to that position, *nature* has spoken in language not to be mistaken, and which we cannot disregard without endangering most important interests. That prudent forecast, so characteristic of a practical people, would long since, I am persuaded, have induced us to occupy Norfolk as a position, not only where a large naval force might concentrate, but as a depot of construction, upon a large scale, had the *improvements of the country in its rear* admitted of a prompt collection of force and supplies for its defence. The James River Canal, with other improvements, will afford the means of *absolute security* to that important position under all circumstances."

The people of the inland States may urge, with justice, another claim to these routes, as works for the common defence. As a rule, the provisions hitherto made for the common defence consist chiefly in the erection of fortifications along the seacoast and of works for the protection of the seaport towns ; of the establishment along the Atlantic seaboard of dock-yards, arsenals and armories ; and for the maintenance of the army and navy. The expenditures for all of these purposes are made chiefly along the seaboard and in the Atlantic States. Counting them up from the foundation of the Government till now, they cannot amount, in the aggregate, to less than several thousand millions of dollars.

A large part of this money as well as that for surveying and lighting and improving the harbors of the sea coast was and is paid by the people of the West. The advantages to the Atlantic States of having all this money expended among them, and the disadvantages to the inland States of having to raise it, have been long felt by the people of the West as an unequal distribution of the burthens of taxation as well as an unfair allotment among the

States of the benefits arising from the annual expenditure of large sums of public money.

These feelings, in the breasts of Western men, are not by any means mollified by the reflection, that while all this has been going on, under the plea of common defence and general welfare of the *whole* country, they are still left to find their way in war to the market places of their own country, as best they may, through foreign waters and beyond the jurisdiction of their own Government.

These two lines of improvement through Virginia are works which in their way are calculated to provide for the common defence and promote the general welfare far more effectually than any yet devised. *They are girders required to bind and hold the Union together.*

A LINE OF STEAMERS WITH EUROPE.

Another kindred subject incident as to the geographical position of the State, and one closely connected with its prosperity and the development of its physical resources, is the establishment of direct trade with foreign countries.

The great and special commercial importance of harbors depends—

1st. Upon their geographical position and hydrographical features.

2d. Upon the internal improvements connected with them, and upon the extent, wealth and resources of the back country into which these improvements lead.

3d. Upon the capacity of these improvements to bring forward the produce of that back country cheaply, and upon the capacity of those harbors to admit vessels to transport that produce directly to the markets of the world.

In all this, nature has in an eminent degree favored Virginia.

The value of the agricultural products exported from the whole country in 1866 was, according to the official report of the Government, \$412,284,302.* Nearly all of it came from the section

* Commissioner of Agriculture for the year 1866, page 96.

of country which these two lines of improvement would bring in connection with the ports of Virginia. Of these \$412,000,000, \$283,000,000, or 68 per cent., was in "cotton and its manufactures," and \$41,000,000, or 10 per cent., in "breadstuffs." Total 78 per cent.

All this cotton and most of the breadstuffs came from the States to the South, the West and the North-west that are concerned in, and would be largely benefitted by these tide-water connections.

These articles are sent forward in the raw and bulky state. To remunerate the producer, they require cheap transportation, such as water can afford, for—let it be remembered, such articles can go 750 miles by river, 600 by our free canal, and 220 by toll exacting canals, as cheaply as they can be carried 100 miles by rail, or 20 by common roads in the West.

The attention of foreign governments and capitalists has, from time to time been attracted to Norfolk, and the rare advantages which the internal improvements of the State would give this port as the western terminus for lines of steamers plying between this country and Europe.

In 1848, the General Assembly of Virginia, by an act, passed 27th March, incorporated the Norfolk and San Nazaire Navigation Company, with a capital of \$3,000,000, with the view of encouraging our improvements into the back country, and of connecting it through San Nazaire with the railway system of France and the continent. This act was based upon the preliminaries of a convention which had been entered into by our distinguished fellow-citizen, the late William Ballard Preston, acting as commissioner of the Bristol convention, with Mr. Soulacroup, Chief Director of the Orleans Railway Company, whose roads connect San Nazaire with Paris and the continent.

The war broke up this arrangement; but at the Sessions of 1865, 1866 and 1867, this act was further continued and amended, and the capital stock enlarged to \$5,000,000.

It is now on the statute book waiting the propitious moment to have effect given to it.

This report has for its object, not only to treat of the geo-

graphical position of Virginia in all its bearings at home, but to point out their practical importance to other States, the nation and the world at large.

We have considered the physical relations in which the Chesapeake Bay, with its fine creeks, rivers and harbors, stands to the people of the West. It remains now to show how, by means of its geographical position and physical attributes, it extends, with its influences, beyond the sea, touches the interests of European nations and reaches the commerce of the world.

Holland holds, geographically, on the eastern shores of the Atlantic Ocean, the same position with regard to Central Europe that Virginia on its western shores, does to our back country. As with Virginia, so in Holland:—commercial thoroughfares leading to the sea from the back country geographically tributary to her, instead of taking the shortest route, went round about; and instead of passing through Holland, sought circuitous outlets, either to the north or to the south of her borders:—

The ports of Holland, like these of Virginia, are the best harbors along the open sea-front of North-western Europe:—Like ours, the Dutch ports are central; and like ours, they are the farthest ports to the north that are ever free from ice.

The head waters of the Rhine which enters the sea through Holland, inscuate closely, like those of our James with the Mississippi, with the head waters of the Danube which finds its way into the Black Sea:—in Europe, they have already connected these two rivers through the Ludwig Canal, as we are doing ours through the James River and Kanawha improvement:—There they have already established a water line into the back country from the Zuider See and the ports of Holland,—as we propose to extend ours from the Chesapeake and the ports of Virginia,—for the distance of more than two thousand miles inland.

At the general expense, the government of Holland is just completing a line of internal improvements, leading by canal, river and rail, from Flushing to Cologne.

There, as here, the people have been looking with longing eyes for the day, when the ports of Holland, like those of Virginia,

shall become the great entrepôts of trade and commerce between the centre of Europe and the heart of America.

The Dutch have their eyes already fixed upon Norfolk and the rare advantages which these improvements will give it. They are now discussing the subject of a line of steamers hither.

The Rhine is open to steamboat navigation from its mouth to Mannheim, a distance of 390 English miles.

Manheim and Cologne and other landings on the Rhine are the principal points inland, where the American-bound emigrants from Bavaria, Switzerland, Hungary, Bohemia, Austria, Baden, Wurtemberg, Saxony and the centre of Europe at present assemble, as a point of departure, on their circuitous route to this country via Bremen or Hamburg.

These two are at present the chief ports of embarkation. Were there a line of steamers, suitably equipped, established between Holland and Virginia, these emigrants could be landed on the banks of the Ohio, or of Missouri, or of any of the navigable tributaries of the Mississippi with only 403 miles of railway transportation when the Chesapeake and Ohio railway is *finished*; and with only 176 miles, should the project of making the James river navigable for steamers up to Lynchburg, and the improvement of the Holston up to Saltville, be realized.

The route which emigrants now take, imposes upon them the fatigues, hardships and expenses of 1,000 to 1,500 miles of railway travelling in Europe and America before they reach their new homes in the far West. By changing the point of embarkation to one of the Dutch ports and taking the Virginia route, they would come down the Rhine all the way by steamboat, to embark in the Dutch-American line for Virginia. Arriving in Hampton Roads, they would have the choice of routes thence, according to destination, and each leading through a climate far less severe in winter than any of the more northern lines can offer, and quite as delightful in summer.

If bound to any part of Ohio, Indiana, Illinois, Missouri, Kansas, Iowa, or Nebraska, or to the States North of them;—or to Kentucky, Tennessee, Arkansas, Texas, Louisiana, Mississippi or North Alabama; or if aiming for the hill country of the Carolinas or

Georgia—they would all take the same river steamer, which in eight hours from Hampton Roads would land them in Richmond, the capital of the State, a city of 40,000 inhabitants beautifully situated at the foot of the falls of the James river, which in the distance of $3\frac{1}{2}$ miles have a perpendicular descent of 84 feet.

Here, those that are bound for Ohio and the North-west, would take the cars on the Chesapeake and Ohio railway, which winding over the mountains in gentle curves and through the most enchanting scenery, would take them by the mineral springs of Virginia; and after a pleasant ride of 20 hours, land them on the banks of the Ohio river.

Here, taking one of the fine Western high-pressure steamers, which look like floating palaces rather than boats, and going with the current, they would the next day, with their wives and children, be landed, fresh and lithe, in Cincinnati or Louisville; and so on in succession from river town to river town, until they reached St. Paul, on the Upper Mississippi; or had ascended the Missouri, 2,000 miles, from its mouth, or landed among the gold and silver mines of Montana. Or stopping short of this, they might step from the boat at Kansas City or Omaha and take the Pacific Railway for the “Gold Diggings” of California.

In passing through Virginia on this route, they would find the people along the first part of it, employed chiefly in farming, fishing, boat building and sea-faring; or in the cultivation of fruits and vegetables, such as the fig, vine and apricot; the tomato and melons; with peaches, pears, plums, apples, cherries and damascenes, for the supply of Baltimore, Philadelphia, New York and other Northern cities.

As he receded from the Chesapeake Bay, the observant immigrant would notice these several industries to be relieved and diversified by other occupations, such as grazing, stock raising, wool growing and timber getting. At Richmond there are many manufacturing establishments and work-shops of various kinds. Hard by, are deposits of bituminous coal; further on, he would observe immense quantities of iron, with miners busy at their vocation and furnaces in full blast.

Beyond the mountains, he would note a marked change in the

vegetation, and in the aspects of the country; and among them would be the "sugar orchards," as the people there call the groves of sugar-maple;—all planted by nature, and the most beautiful tree in our primeval forests. If the journey be in February or March, then, whole families would be seen collecting the water and boiling it down into syrup over the fires of the "sugar camp."*

Also beyond the mountains and on the wayside of this route, are oil wells and the salt works with the famous coal fields of the Great Kanawha. These coal measures are said to be the richest in the whole country, and to be unsurpassed in the variety and excellence of the deposits especially those of splint and cannel coals.

If the place of destination be anywhere to the South-west, as in the direction of western Georgia, then the new-comer will take the Danville road at Richmond, which is now in process of completion—being an air-line—to Atlanta, Georgia, where he would be landed the next day after leaving Richmond, and where he would find other roads leading off to the four quarters.

This road passes through Charlotte, North Carolina, where the United States have a mint, and it runs longitudinally along that piedmont country which, with its Italian-like skies, salubrity of climate, and fertility of soil, enchanted the early settlers, and exhausted their praises. It is still the *sanitarium* of the people who inhabit the malarious districts in the low-land country of Georgia and the Carolinas.

This route will take the immigrant through a fine grain growing and stock raising country, and through the best tobacco region in the land.

It will be difficult for the traveler from Germany, Central, or Northern Europe, to realize the change that he will here find, after a few hours, in climate and production, especially in the ripening of fruits, and the coming on of harvest. After his day and a half or two days travel in this direction, he will find in March the table served with strawberries and green peas, gathered from the open

* The making of maple sugar is an important branch of industry in the United States entirely unknown in Europe. The annual yield being 40,120,083 pounds of sugar and 15,97,274 gallons of molasses.—*United States Census*, 1890.

fields and the gardens, and the wheat harvest commencing in May or early June.

Those who prefer some middle destination as Tennessee, Southern Kentucky, North Alabama, Mississippi, Arkansas or Texas, will “*shunt*” from the Chesapeake and Ohio Railway, at Charlottesville; or, from the Danville Road at Burkeville, to get on to the Virginia and Tennessee Road at Lynchburg—an inland town, famous for its tobacco factories, enterprise, and wealth.

This road, before it leaves Virginia, carries its passengers by the salt works and gypsum beds of Abingdon, and through a fine fruit, grain, grape and stock country; rich also in minerals, as lead, copper, iron, zinc, coal, &c., and then down that beautiful valley of the Tennessee, already described, where navigation is said even in the severest winters, never to be interrupted by a “*pellicle of ice*.”

But, if instead of any of the countries through which these three routes pass, or to which they lead, the immigrant should fancy to establish himself anywhere along the Atlantic seaboard, the means of cheap, quick and comfortable conveyance are ready at hand.

Is his destination South? Then there are in Norfolk the cars of the Seaboard and Roanoke Railroad which, with its connections, will carry him through the celebrated pitch-pine region, which, with its groves of cypress and forests of live oak,—the teak of America—skirts the coast all the way from Norfolk via Florida to the borders of Texas. From these forests come the best ship timber for the United States Navy, with naval stores, masts, spars, and yellow pine for the ship-yards of Europe. This route will lead him also through groves of magnolia, through forests of vines, creepers and parasites, and among plantations of rice and cotton until the third day, when he will find himself in the land of flowers and among the orange groves of Florida.

If, on the other hand, his fancy be for the North, he may take a Bay steamer and in 12 hours from Hampton Roads land in Baltimore; or on a sea steamer for New York in 24:—distance 279 miles.

Thus sailing from Holland and landing in Virginia, the points of departure and arrival would be at the most central, commanding and convenient points in Europe and America.

Distances to Cincinnati and St. Louis via Hamburg and New York, and via the Ports of Holland and Virginia from various places in Central Europe.

Distances (in Nautical Miles) to Cincinnati, via From	Hamburg and New York.	Holland and Virginia.
Berlin.....	4,650	4,370
Leipsic	4,700	4,440
Stuttgart	4,860	4,410
Magdeburg.....	4,630	4,280
Frankfort	4,760	4,320
Dresden	4,760	4,500
Munich.....	4,920	4,450
Vienna.....	5,040	4,670
Manheim.....	4,800	4,350
Cologne.....	4,740	4,210
Strasburg.....	4,880	4,420
Hanover.....	4,590	4,320
Breslau.....	4,890	4,630
Prague	4,850	4,590
Basle.....	4,930	4,480
Metz.....	4,870	4,260
Brussels.....	4,820	4,130
Antwerp.....	4,810	4,100

Distances (in Nautical Miles) to St. Louis via—	Hamburg and New York.	Holland and Virginia.
Berlin.....	4,910	4,660
Leipsic	4,960	4,800
Stuttgart	5,120	4,670
Magdeburg.....	4,900	4,550
Dresden	5,020	4,770
Frankfort	5,020	4,580
Munich.....	5,180	4,750
Vienna.....	5,300	4,930
Manheim.....	5,070	4,610
Cologne.....	5,000	4,470
Strasburg.....	5,140	4,690
Hanover.....	4,860	4,590
Breslau.....	5,150	4,900
Prague	5,110	4,830
Basle.....	5,200	4,740
Metz.....	5,140	4,530
Brussels.....	5,090	4,390
Antwerp.....	5,080	4,370

The distance from Hamburg to New York is 3,550 sea miles.

Flushing and Norfolk are taken as the ports in Holland and Virginia. The distance between them by sea is 150 miles less

than the distance between Hamburg and New York.—(The port of Bremen—Bremer-Haven—is 50 miles nearer than Glückstadt—the port of Hamburg.)—Therefore if we subtract 3,550 miles from the preceding distances via Hamburg we shall have the distance inland and on the two continents which emigrants, taking the route via Hamburg and New York, have to travel—and that distance is chiefly by rail. Thus the distance via Hamburg and New York from Vienna to St. Louis is 5,300 miles 1,750 of which are inland, and most of it by rail.

The distance between the same points via Holland and Virginia is 370 miles less, with sea or river navigation all the way except the Ludwig Canal, in Europe, the Chesapeake and Ohio railway, in America, 428 miles—ultimately to be 403.

Flushing is at the *Balize* of the Rhine, and on the deltas of the Scheldt. Flushing is only five hours from England. It is at the other end of the English channel. Easy of ingress and egress, its offings are as convenient, as safe and as sure as a navigator could desire.

They are already preparing docks there for the accommodation of the immense direct trade which those well planned lines are destined to bring to Flushing, and are looking out for connections with this country.

Our trade last year with the two cities of Bremen and Hamburg alone—and we had to pass through the offings of Flushing to reach them—was upwards of \$26,000,000 each way, making in the aggregate \$52,572,933.*

Most of this is the German trade, and much of it went to parts that the Dutch improvements will hereafter better supply through Flushing.

Of these \$26,000,000 of exports, \$13,443,210 were in the Southern staples of cotton and tobacco; and of the rest, \$4,561,465 were in wood, oils and animal productions, &c., in which the back country naturally tributary to the Chesapeake, is also very rich.

A line of steamers has been recently established between Baltimore and Bremen. It is doing well. But Norfolk and Flushing

* Annual Report Bureau of Statistics, 1867.

are between Baltimore and Bremen. They are on the wayside and are 450 miles—nearly two days—nearer together than are Baltimore and Bremen.

Thus Virginia, with her works of internal improvement already in *esse*;—with the advantages of her geographical position, and with this Baltimore line of steamers to beckon her on, has a combination of circumstances peculiarly in favor of her long-coveted boon of direct trade. The times for it seem now more propitious than they ever have been.

Virginia, like the South and the West, needs labor and instant immigration.

These improvements being complete, the best sea route for immigration from all Southern and Central Germany, Belgium and Holland into the South and West, will be from Flushing to Norfolk, and thence by bay and river and rail to all parts of the South and West.

From Norfolk to the Lizard, the distance by great circle is 3,074* miles, and the best route lies in that part of the ocean where navigation is not endangered by either the iceburgs of one season or the fogs of another.

I have received encouraging letters from Holland upon this subject. They are moving there; and, if our citizens have the enterprise and ability to meet the Dutch half way, and give them encouragement, it is now in their power to bridge the Atlantic with this line of steamers, and bring the centre of Europe and the heart of America in close connection, and that too by the most direct route that the winds and the sea, on one hand, and the mountains and the distance on the other, admit.

The accompanying maps (II and III) are intended to show this steam route with the country geographically tributary to Norfolk; also the principal works of internal improvement which are intended to connect Norfolk and Flushing each with its back country.

Those which connect, or are intended to connect Norfolk with the Mississippi valley, are obvious at a glance. They have been already described.

Those which connect Flushing with the centre of Europe, are also—the principal lines among them—projected on map II. They afford a water line all the way from the ports of Holland into the Black Sea. They also reach into other sections by canal, river and rail.

A friend in Holland who, with his great influence and moral worth, is earnestly desirous of promoting the welfare of his own country, through these connections, writes:

“We have a water communication from the Danube, along the Ludwig canal into the Main and the Rhine, and down to Flushing, during at least nine months of the year. We can send small-draft steamers on the Rhine, painted on the paddle-boxes ‘DIRECT TO AMERICA, VIA HOLLAND AND VIRGINIA—THE SHORTEST AND QUICKEST ROAD TO AMERICA FOR EMIGRANTS.’

“We can do something also to promote the interests of Virginia by this line of steamers, but we must have, on both sides, some enterprise, commercial pluck and skill.”

Norfolk offers also by reason of her position and geographical relations, special inducements to Cincinnati and other Western cities, for trade with Brazil and South America.

These countries consume largely of the breadstuffs and provisions of Virginia, Ohio and the West.

The value of the commerce between the United States, on one hand, and Brazil and the Republics of South America on the other, amounted to \$52,590,407 for the year ending 30th June, 1867: but, instead of being—like that with Hamburg and Bremen—nearly equally divided between exports and imports, it is made up of \$34,028,204 of the latter, to \$18,562,203 of the former.

The greatest difference and most valuable trade is with Brazil, where the balance of trade is against us is in the proportion of nearly four to one.

We send to Brazil \$5,055,930 and receive from her \$19,132,951 in return. Of this, \$15,386,844* is in coffee alone.

This coffee is chiefly consumed in the West and the North-west,

* Bureau of Statistics.

and with Norfolk as the place of importation, and these Virginia routes for cheap transportation, Cincinnati, Louisville, St. Louis and Memphis, would become the great centres of its distribution.

Before the war, a line of sailing packets had been established between Richmond and Rio; and though but a short time in existence, it had already made Richmond one of the chief coffee ports in the country.

With these cheap water lines to the Ohio, the farmers of that section would be brought—through Norfolk—in connection with Brazil and the Amazon, by a cheaper and more direct route than it is possible for them to be by any other seaport.

And if with Brazil and the valley of the Amazon, then with all other countries beyond, as with the valley of the La Plata, with Chili and Peru, California and the Pacific, the Cape of Good Hope, Australia, India, China and Japan; for our inland States can trade through the Chesapeake with all these countries more directly and advantageously than they can through any other port.

The people of the inland States in the Mississippi valley and of some of them on the Atlantic seaboard, have an interest as great as that possessed by Virginia in the speedy opening of these thoroughfares, and the time has come for it to be done by them, by her, or by the nation at large, and that right speedily.

The next Report will treat of the Climates and Productions of the State.

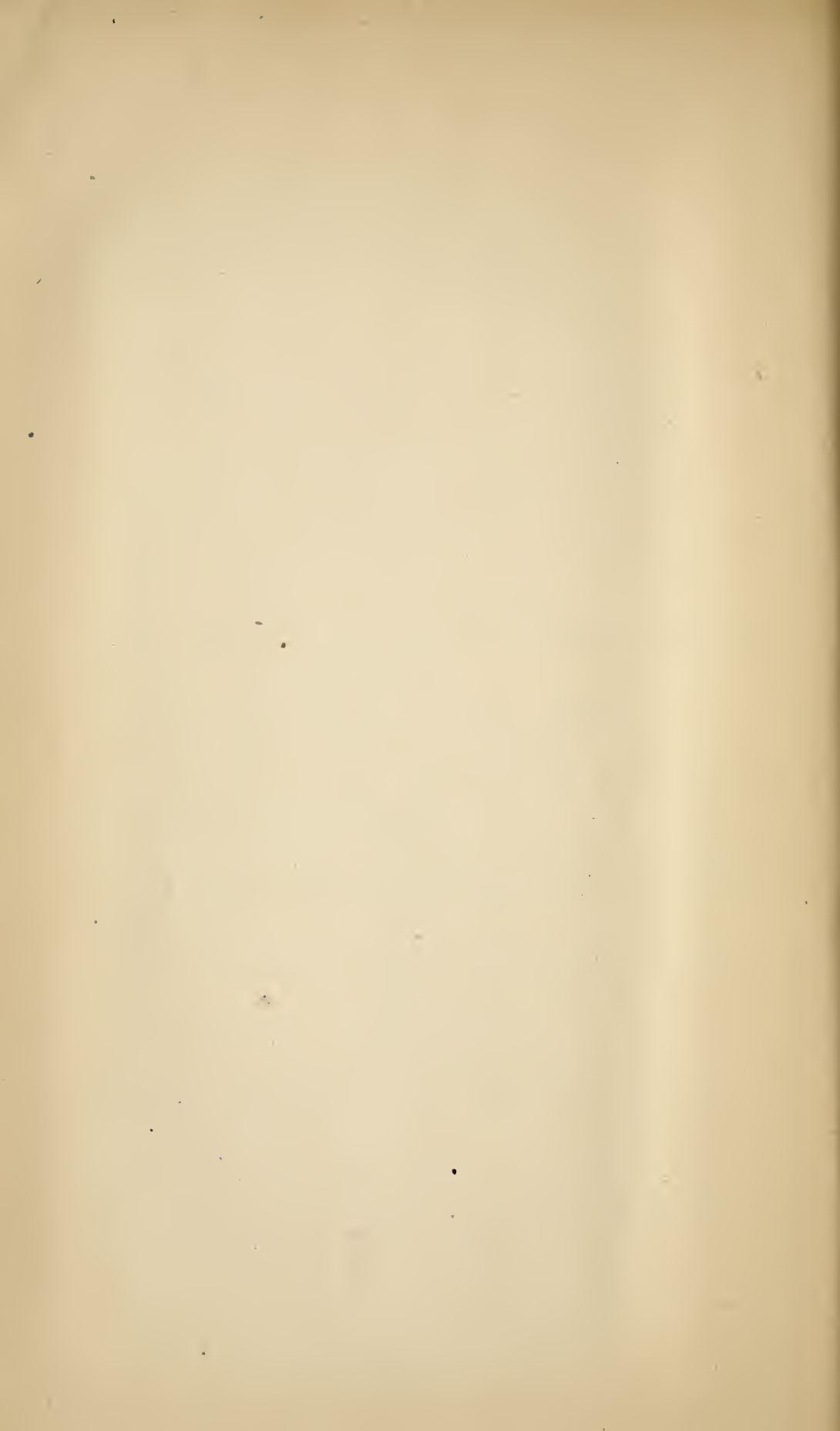
Respectfully, &c.

M. F. MAURY,

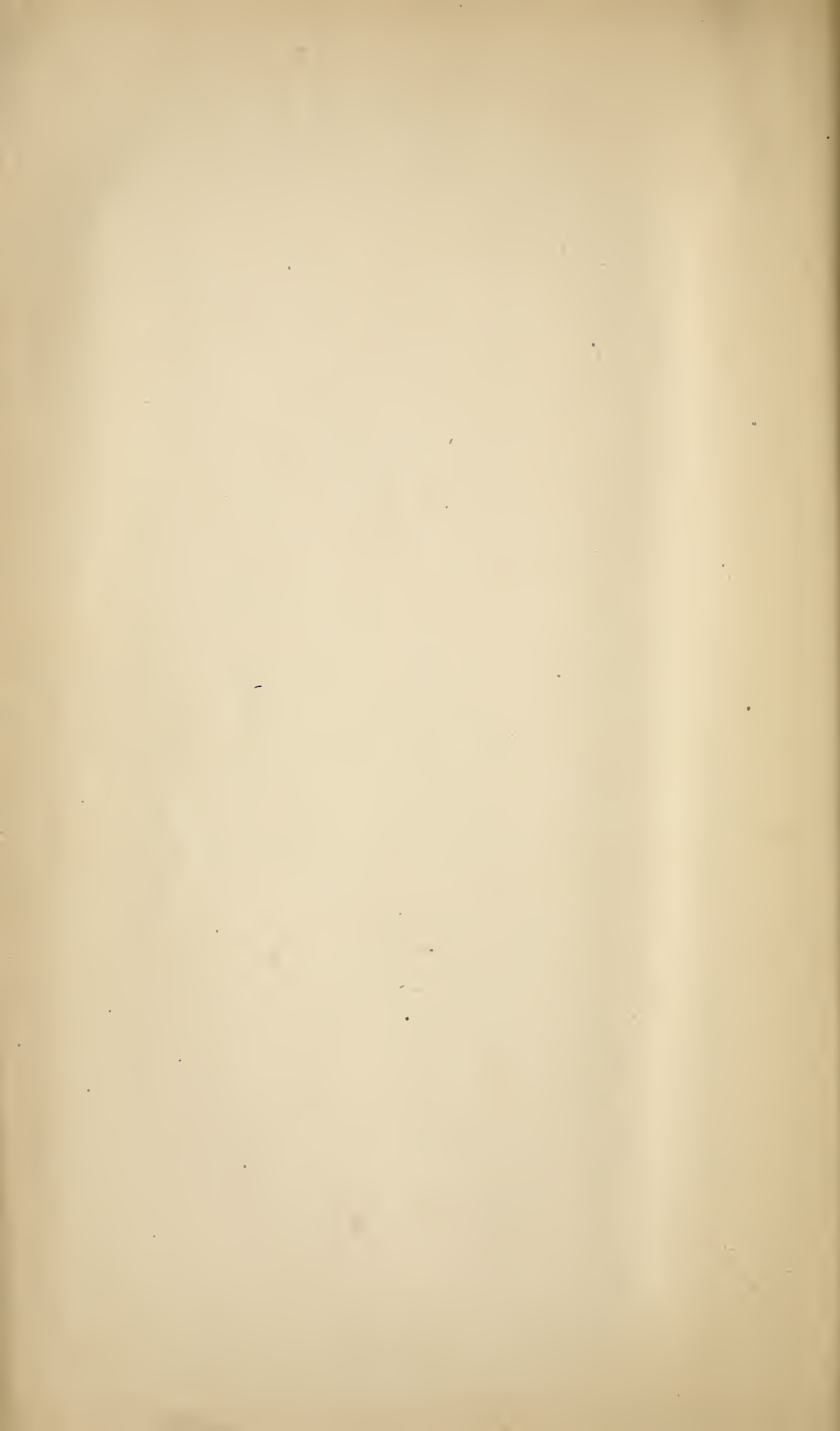
Superintendent Physical Survey of the State, and

Prof. Physics V. M. I., Lexington, Va.













3074 Miles from Norfolk to the English Channel

4740 Miles from Cologne via Hamburg and New York to Cincinnati (1190 Miles by rail)
 4210 Miles from Cologne via Flushing and Norfolk to Cincinnati (428 Miles by rail)

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Rhone Line

STEAM LINE BETWEEN NORFOLK & FLUSHING

*Showing the back country geographically tributary to each,
and the internal improvements connected therewith*

References

- Water Line 
- Finished R Roads 
- Unfinished R Roads 

Physical Survey
of VIRGINIA
Va. Mil. Inst. 1868



Office of Physical Survey of Virginia,
Virginia Military Institute.

Sept. 1868

Supt. P.S.V.

————— Railroad Completed
- - - - - Unfinished Railroad
~~~~~ Water Line

Scale 1 inch is one degree at the equator.

Plate III.  
**MAP**  
OF THE  
**United States.**

Constructed on the Rectangular Tangential Projection.

BY  
J.H. Waddell, Asst. Prof. of Drawing;

prepared under the instructions

of

**(M.F. MAURY, L.L.D.)**

Prof. of Physics, V.M.I.

Lab. by A. Horn & Co. Baltimore







